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Full Name of Author — Nom complet de l'auteur

JENNINGS, Gail Kathryn

Date of Birth — Date de naissance	Country of Birth — Lieu de naissance
JUNE 22, 1957	CANADA

Permanent Address — Résidence fixe

#302 281 BROOKSIDE TERRACE
EDMONTON, ALTA
T6H 4J6

Title of Thesis — Titre de la thèse

CONSUMER ASSESSMENT OF FLEXIBLE INSULATIVE WINDOW SHADES: AN APPLICATION OF THE FISHBEIN-AJZEN MODEL

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1984	DR. ELIZABETH M. CROWN

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CONSUMER ASSESSMENT OF FLEXIBLE INSULATIVE WINDOW SHADES: AN APPLICATION OF THE FISHBEIN-AJZEN MODEL

by

© GAIL JENNINGS

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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IN

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TITLE OF THESIS CONSUMER ASSESSMENT OF FLEXIBLE INSULATIVE WINDOW SHADES: AN APPLICATION OF THE FISHBEIN-AJZEN MODEL

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(SIGNED) Gail Jennings

PERMANENT ADDRESS:
302 281 Brookside Terrace
Edmonton, Alta
T6H 4J6

DATED October 12 1984

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled CONSUMER ASSESSMENT OF FLEXIBLE INSULATIVE WINDOW SHADES: An Application of the Fishbein-Azjen Model submitted by GAIL JENNINGS in partial fulfilment of the requirements for the degree of Master of Science IN Consumer Studies.

Betty Dunn

Supervisor

Date 1984 10 02

ABSTRACT

Consumer Assessment of Flexible
Insulative Window Shades: An Application
of the Fishbein - Ajzen Model
by
Gail K. Jennings

University of Alberta, 1984

Professor: Dr. Elizabeth M. Crown
Faculty of Home Economics
Department of Clothing and Textiles

The purpose of this study was two-fold: to determine the extent to which peoples' beliefs about energy conservation and flexible insulative window shades affect the formation of attitudes and intentions toward using insulative shades, and in doing so, to determine the applicability of the Fishbein-Ajzen model of behavioral intention as a conceptual framework for such research.

A self-administered questionnaire containing 78 items was used with many of the items designed according to the procedures outlined by Ajzen and Fishbein (1980). Pre-tests of the instrument and it's reliability were performed using a convenience sample.

Five different mock-ups of flexible insulative window shades along with a brief, technical description and demonstration were provided to groups of respondents before the questionnaires were administered. The sample was nearly divided equally between respondents who had received some energy related education and those who had not. A small percentage of the sample reported having some experience with using insulative shades in their home.

The data from 122 questionnaires were computer analyzed using multiple regression analyses, Pearson product-moment correlations, chi-squared analyses and t-tests. The findings indicated that most of the respondents were aware of flexible insulative window shades and expressed a need for using such products. The beliefs and evaluations toward using insulative shades and toward conserving energy in the home were quite effective in measuring attitude toward these behaviors. The abilities of normative beliefs and motivations to comply to measure subjective norm were not as great but were still effective. Attitude toward the outcome of performing a behavior and normative compliance together provided considerable influence on behavioral intention particularly when both components were directly measured.

A proposition put forth by Ajzen and Fishbein (1980) was supported by the findings of this study as no associations were found between components of the model which differed in their level of specificity. Four sets of beliefs about energy conservation were reported in the literature reviewed as influencing behavior but were not included within the Fishbein-Ajzen model for this particular study. Findings indicate that some of these beliefs had a relationship with behavioral intention and, therefore, should be included within the regression model in the future. Finally, energy related education and/or experience with using insulative shades seemed to have only a limited effect on energy related beliefs, attitudes and behavioral intentions.

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I. INTRODUCTION

Canada has the highest per capita energy use of any major country in the world. It has been reported that each Canadian consumes slightly more than a person in the United States, nearly twice as much as someone in West Germany, Britain or Sweden and three times as much as a person living in Japan (Marmorek, 1981). Canadians cannot claim that the embarrassingly high level of energy use is due to the highest standard of living, because in 1977 we were lower than Sweden for average per capita income and equal with Germany. Nor can we attribute high energy consumption to the vastness of our country and the great distances we are required to travel. Again, according to Marmorek (1981), Canadians use more energy *per kilometre* per car travel than do drivers in the United States, Belgium, France, Britain, West Germany, Holland, and Italy. When it comes to heating our homes, we are less efficient than Sweden, Japan, France, and Italy even after the adjustments for climatic conditions are made.

Why do Canadians use so much energy? Much of the answer is related to our history of inexpensive energy available in great quantities, often referred to as our "cheap and plentiful" days. Due to past experience Canadians have come to believe that our energy supply is easily accessible and inexhaustable. Even in 1973 when the oil embargo caused many Americans to wait patiently in line at service stations to receive rationed quanities of gas, Canadians were able to enjoy a constant and affordable supply of energy.

Present day experts claim that the cheap and plentiful days have definitely passed and the future is much darker than we realize. Wilson (1980) claimed that Canada will be facing large shortages of oil and gas within a very few years. He stated that,

> "Even though this country is believed to be among the best endowed in the industrialized world in terms of resources... given our current course... overall energy demand will significantly outstrip domestic supply within the foreseeable future. This would be true even if energy demand growth rates were cut in half during the next two decades and more than halved again after 2000"(p. 87).

With private individuals consuming nearly one third of our total national energy consumption, this sector is obviously worthy of close examination as a potential source of

energy savings. It is estimated that consumers use twenty percent of the nation's energy in their homes while twelve percent is consumed by automobiles (El Mallakh, 1978). A common misconception is that most of the energy consumed in the home is for lighting and operating appliances, when in fact, more than half of the energy is used for space heating as seen in Table 1.

Table 1

Distribution of Residential Energy by End Use in the United States

End Use	Percent
space heating	53
hot water	14
air conditioning	7
refrigerator	6
lighting	5
cooking	5
freezer	2
other	8

Source: Ross & Williams (1981, p. 100)

As space heating requires much of our energy, many home energy-saving improvements have been developed. Some of these include insulation, storm or thermal windows and doors, insulative window shutters or shades, clock thermostats, and caulking or weather stripping of exterior doors, windows and walls. It has been estimated that by using a variety of these technological innovations, as much as fifty percent of the energy currently used to heat homes in the United States could be saved (Sinden, 1978).

Of particular interest in this study is the flexible insulative window shade. This type of window treatment is very appropriate for use in Canada due to the amount of heat loss through windows during nights of sub-zero temperatures. It is estimated that window insulation (i.e., shutters or shades) with an R-value of 9.7 is six times more

effective in reducing heat loss than double glazed windows. Looking at it in a slightly different way, insulative window shades are capable of reducing heat loss from a house by about thirty percent (Marmorek, 1981). These shades are designed to be used in combination with other insulating methods (e.g., wall insulation, weather stripping), in order to obtain maximum results. According to Darley and Beniger (1981), no single action should be expected to produce vast energy savings in residences. Using these shades on an otherwise poorly insulated house would likely provide insignificant energy savings.

Statement of the Problem

Most people desire some type of window treatment in their home, insulative or not, for reasons of decoration, privacy or comfort. The questions posed in this study focus on what consumers know about insulative shades and how they feel about using these products in their own home. Also of interest is how these answers relate to the consumers' beliefs and attitudes about the energy problem in general.

Recent studies regarding the effectiveness of various energy conserving methods have concluded that activities which promote *specific* conservation measures (e.g., window insulation), are more effective in reducing energy consumption than merely providing general information on energy conservation. McDougall and Keller (1981) suggested that policy makers should first consider practices which lead to more efficient use of energy rather than those which require behavioral changes. The promotion of window insulation would be of the former type.

In recent years several new products have become available for use as insulation for windows in homes and other buildings. Many of these products are flexible and thus can be used in place of conventional draperies or blinds. Some are merely modified versions of conventional treatments using new materials while others are completely new systems.

Because many window insulation products may be more costly than conventional draperies and/or differ considerably in appearance, consumers will be considering

tradeoffs in making any decision to adopt the insulating types. If economic rewards or incentives are not to be tied to the promotion or use of such products, it might be necessary to promote them as attractive alternatives for conventional draperies. A knowledge of consumer attitudes is essential as a basis of such promotion. Ellison and Ellison (1981) included two flexible types in their study on consumer assessment of five energy conserving window types. Otherwise, to date little research has been conducted regarding consumer beliefs about or attitudes toward these window insulation products.

Justification

The ability of flexible insulative window systems to effectively conserve energy has been adequately substantiated in the literature (Marmorek, 1981; Ross & Williams, 1981). The next vital area of concern is to assess consumer reactance and intentions toward adopting these products. Once this information is known, government and/or private industry will be able to make more efficient decisions regarding the allocation of their resources. For example, if research findings indicate that consumers have limited or inaccurate information creating negative attitudes toward window insulation, then efforts should be directed toward disseminating information designed to change attitudes rather than wasting resources by attempting to promote an unpopular product. In his review on conservation psychology Shippee stated,

> "When potential behavioral, attitudinal and perceptual responses to technological innovations are not assessed, the solutions often prove unsuccessful. This generalization seems particularily applicable to energy consumption and conservation technology" (1980. p. 297).

The need to measure beliefs, attitudes and intentions regarding *specific* energy applications has been identified as an important step in developing greater understanding of the attitude-behavior relationship (Ritchie, McDougall and Claxton, 1981). According to Awad et al.,

> "Successful campaigns targeted to encourage a specific. .. conserving behavior are likely to require detailed understanding of the factors determining that particular behavior, its costs and benefits. In addition, they are likely to require detailed understanding of the needs, awareness and understanding of different segments with respect to that behavior" (1982, p. 654).

In order to accurately determine consumer beliefs, attitudes and intentions toward performing a behavior, an accurate measuring device must be developed and tested under a variety of conditions. To date, one of the most popular and well accepted measuring devices of behavioral intention is the Fishbein-Azjen theory of reasoned action. However, the controversy and discussion currently surrounding the validity of the Fishbein-Ajzen theory suggests the need for further research and clarification. This study will attempt to determine the applicability of the model as a conceptual framework when examining energy related consumer behavior.

Purpose

The purpose of this study is two-fold: to determine the extent to which peoples' beliefs about energy conservation and flexible insulative window shades affect the formation of attitudes and intentions toward insulative window shades, and in doing so, to determine the applicability of the Fishbein-Azjen model of behavioral intention as a conceptual framework for such research. The findings of this study will provide needed information to allow the researcher and others to design and/or promote products that are not only energy efficient but also acceptable on other attributes.

Objectives

The objectives of this study are as follows:

1. to determine consumer awareness of flexible insulative window systems and the need for such products;
2. to determine the extent to which consumer beliefs and evaluations about a variety of flexible window insulation systems shape their attitudes toward such products;
3. to determine the extent to which normative beliefs and motivation to comply with important referents shape the subjective norm;
4. to determine the degree to which attitudes and normative compliance determine behavioral intentions (intention to adopt such products);
5. to evaluate the applicability of the Fishbein-Azjen model of behavioral intention in

studying the above relationships;

6. to determine the extent to which general energy related beliefs and attitudes affect attitudes and behavioral intentions toward flexible insulative window systems;
7. to measure beliefs outside of the Fishbein-Ajzen model and their effect on behavioral intention;
8. to determine the extent to which exposure to energy related educational programs, and/or previous experience with insulative window products affect the above variables.

Null Hypotheses

The following null hypostheses will be tested to meet objectives two, three and four:

1. a. There is no significant relationship between beliefs and evaluations about the outcome of performing a behavior and measured attitude toward performing a behavior for:
   (i) conserving energy in the home
   (ii) using insulative window shades
   (iii) using Shade X

   b. There is no significant relationship between normative beliefs and motivation to comply and measured subjective norm for behaviors such as:
   (i) conserving energy in the home
   (ii) using insulative window shades
   (iii) using Shade X

2. There is no significant relationship between behavioral intentions and a) attitude toward the outcome of performing a behavior and b) subjective norm

The following null hypothesis will be tested to meet objective 6:

3. There is no significant relationship between behavioral intention at the intermediate level of behavior (i.e. using insulative shades) and a) energy related beliefs at the general level or b) energy related attitudes at the general level.

The following null hypotheses will be tested to meet objective 8:

4. Subjects exposed to differing levels of energy conservation education and/or experience with energy efficient shades will not differ significantly in:

a) their awareness of the existence of insulative shades

b) their perceived need for insulative shades in the home

c) their energy related beliefs such as:

(i) ability to repair/construct an energy efficient product

(ii) responsibility for the energy problem

(iii) personal consequences of an energy shortage

(iv) importance of individual efforts to conserve energy

d) their attitude toward insulative shades and their beliefs and evaluations toward selected attributes of insulative shades such as:

(i) aesthetics of insulative shades

(ii) cost of insulative shades

(iii) ease of operation, repair and/or construction

(iv) actual energy efficiency

(v) comfort of insulative shades

Definitions

Flexible insulative window systems - specialty window treatments designed to seal windows from heat loss and are generally composed of several layers of materials.

Consumer awareness of insulative shades - consumer cognition of the existence of insulative shades as measured by question 1,Part A of questionnaire(Appendix B).

Perceived need for insulative shades - the necessity of using insulative shades in the home as measured by questions 16 and 17, Part A.

Beliefs - refer to acceptance of, or confidence in, an alleged fact or body of facts as true or right without positive knowledge or proof. (American College Dictionary, 1962, New York:Random House)

(a) *attitudinal beliefs* - refer to a person's belief that performing a behavior will lead to consequence i (b_i) (Fishbein and Ajzen, 1980).

(i) beliefs about energy conservation in general and in the home are measured by questions 4 - 15, Part A and questions 2 - 3, Part B respectively.

(ii) beliefs about using insulative shades in the home and specific shades are measured by questions 17 - 22, and 43 - 49, Part B respectively.

(b) *normative beliefs* - refers to a person's belief that a specific referent or group of referents thinks he should (or should not) perform a particular behavior (Fishbein and Ajzen, 1980).

(i) normative beliefs about spouse, family, friends and government officials regarding energy conservation in the home and the use of insulative shades are measured by questions 7 - 10 and 32 - 35, Part B respectively.

Evaluation of consequence or outcome - refers to a person's positive or negative evaluation of the outcome of performing a given behavior (e_i) (Fishbein & Ajzen, 1980).

(i) evaluations of the outcomes associated with conserving energy in the home and using insulative shades are measured by questions 4 - 5 and 24 - 30, Part B.

Motivation to comply - refers to a person's desire to comply with the expectations of another individual referent or group of referents (MC_j)(Fishbein & Ajzen, 1980).

(i) motivation to comply with spouse, family, friends and government officials regarding energy conservation in the home and using insulative shades are measured by questions 11 - 14 and 36 - 39, Part B respectively.

Attitude - position, disposition or manner with regard to a person or thing (American College Dictionary, 1962, New York:Random House).

Attitude - a learned predisposition to respond consistently in a favorable or unfavorable

manner with respect to a given alternative (Fishbein & Ajzen, 1980).

(i) attitude toward conserving energy in the home, toward using insulative shades and toward using a specific insulative shade are measured by questions 21, 36, and 58, Part B respectively.

Subjective norm - refers to a person's belief that his/her important referents collectively think he/she should (or should not) perform a particular behavior (Fishbein & Ajzen, 1980).

(i) subjective norms regarding conserving energy in the home, using insulative shades and using a specific insulative shade are measured by questions 26, 51 and 66, Part B respectively.

Intention - act of determining mentally upon some action or result (American College Dictionary, 1962, New York:Random House).

(i) behavioral intention toward conserving energy in the home, toward using insulative shades, and toward using a specific insulative shade are measured in questions 20, 35 and 57, Part B respectively.

II. REVIEW OF LITERATURE

The review of literature which follows includes two main sections. The first section describes the development of theories of attitude-behavior relationships and focuses primarily on the Fishbein-Ajzen model of behavioral intentions. This section also includes research specifically related to energy conserving attitudes and behaviors. The second section describes several factors affecting the propensity of consumers to adopt energy conserving behaviors in the home and briefly outlines current knowledge about the demographic and socio-economic characteristics of the energy conscious consumer.

A. Theories of Attitude-Behavior Relationships

Attitude has become an important construct worthy of close examination due to its presumed causal influence on behavior. While efforts to establish attitude as a valid psychological concept began in the early 1900's (Thomas & Zniecki, 1918; Watson, 1925), Allport (1935) was the first to attempt to combine the existing defintions and usages of attitude and differentiate it from other psychological concepts. Between 1930 and 1950 two distinct streams of attitude theory emerged. The first was the learning-behavior theory which was based on the principles resulting from investigations of human and animal learning. Within this classification is the stimulus-response theory (S-R theory) of attitude formation which posits that attitude is an *emotional* response to a stimuli. These emotional responses can be positive or negative and may be evoked by many stimuli in a process of classical conditioning (Staats, 1967).

The second major theme is the cognitive integration theory which is based on the analyses of an individual's sensory perception of his environment. The most popular of the cognitive integration theories is the cognitive consistency theory. According to McGuire this theory proposes that,

> "the person tends to behave in ways that minimize the internal inconsistency among his interpersonal relations, among his interpersonal cognitions, or among his beliefs, feelings and actions" (1967, p. 401).

In light of the brief description of the two major themes presented above, the Fishbein-Ajzen (1975) theory of reasoned action used in the present study is more characteristic of the cognitive consistency theory as it proposes that overt behavior is often consistent with an individual's salient beliefs, personal and social attitudes and behavioral intentions.

Some of the earlier attempts to support the assumption that a causal relationship exists between attitude and behavior produced damaging results. The first and best-known study of this kind was a racial prejudice investigation performed by LaPiere (1934). In this study a young Chinese couple accompanied LaPiere to 251 hotels, restaurants and other establishments across the United States and were refused service only once. Six months later LaPiere sent letters to each business visited asking if they would accept Chinese guests in their establishment. Over ninety percent of the 128 respondents replied they would not. Negative results such as these caused researchers to explore reasons for the failure of reported attitudes to accurately predict overt behavior.

Wicker (1969) suggested two factors which help explain the conflicting results found by LaPiere: personal factors and situational factors. Included as a personal factor were the other attitudes held by the individual. If an overt behavior does not coincide with a given verbal attitude, it may be because the behavior is being consistent with other more strongly held attitudes. For example, a person who has a favorable attitude toward ice cream may not consume it if they hold more favorable attitudes toward retaining or reducing their present body weight. Competing motives have also been suggested as an influential factor in the attitude-behavior linkage (Wicker, 1969; Cook & Selltiz, 1964). Motives related to a given behavior (e.g., serving Chinese guests to avoid a disturbance) may be stronger than motives underlying a relevant attitude (e.g., Chinese guests will not be accepted in my establishment). Finally, Wicker suggested that low intelligence, poor verbal, hearing or reading abilities may restrict some individuals from appropriately transferring attitudes into effective acts.

In examining situational factors, Wicker stated that the attitude-behavior relationship is strongest in situations where verbal and overt behavior are very similar. With this in mind, it is not reasonable to assume that verbal responses given on a questionnaire which ensures confidentiality will directly relate to observable behavior which is often influenced by social norms and group pressures. Another situational factor causing inconsistency in the attitude-behavior relationship is unforeseen or unanticipated events (e.g., financial changes, illness, unavailability of product or service) (Wicker, 1969; Fishbein & Ajzen, 1972). A final situational factor according to Wicker, results from expected and/or actual consequences of various acts. Consideration of future consequences of one's actions may lead to inconsistencies with present behavior. For example, an unreligious individual with political aspirations may begin attending church to improve his image for future campaigns. In this case, the individual's negative attitude toward religion seems very inconsistent with his church attending behavior.

To expand on the problem further, Engel and Blackwell (1982) point out several terminological and methodological problems that can arise when studying attitude and behavior. One of the first problems to be encountered is defining the term *"attitude"*. In a review of literature, it quickly becomes apparent that the single concept "attitude" has numerous definitions. Naturally, many of the definitions vary greatly in meaning, resulting in different concepts being measured and, therefore, inconsistent results being obtained.

Another major weakness in attitude-behavior research is the countless methods used to measure attitude. With each method of measurement emphasizing slightly different attitudinal and behavioral components as well as differing relationships between the components, it is not surprising that conflicting results are frequently obtained. Inaccurate results may also occur when the time interval between recording the verbal response and observing the overt behavior is too long.

The possibility of obtaining inaccurate results may also depend on the behavioral intention (or behavior) under investigation. For example, energy conservation is a "motherhood" concept meaning that everyone supports it in theory. As energy conserving attitudes and behaviors are perceived as socially commendable attributes, respondents may become inaccurate in answering questions about their past actions and

future intentions regarding energy conservation in attempts to give the "right" answer. However, when overt behaviors are actually observed and recorded, researchers often find the respondent's *reported* attitudes and behaviors to be quite inconsistent with their *actual* behaviors.

Another common problem has been the over-reliance on attitude alone to accurately predict behavior. Only in recent years have researchers realized that there are many factors, attitude being only one, which must be combined to fully explain a complex behavioral act. Fishbein (1967) is credited with being the first to combine serveral factors into a systematic formulation and for this reason, his theory has received widespread attention and examination.

The Development of the Theory of Reasoned Action

This section begins by outlining the original Fishbein model of attitude formation and is followed by a brief presentation of the basic components in Dulany's theory of propositional control as Dulany's concepts were later incorporated into Fishbein's modified theory. The extended Fishbein-Ajzen model will then be detailed including a review of several controversial aspects of the model. The final section will briefly describe current knowledge of the relationship between energy related attitudes and energy conserving behaviors.

The original Fishbein model (1967) was based on previous research (Rosenberg, 1963) which advocated an "expectancy-value" approach to explain attitude formation. According to this approach, an individual's attitude toward an object is determined by the expectancy or belief that the object possesses particular attributes. Stated as an equation the formulation is as follows:

$$Ao = b_i a_i$$

where:

Ao = attitude toward the object

b_i = belief that the object possesses

the ith attribute

a_i = the evaluation of the ith attribute

n = the number of salient attributes

In this formula, the scores obtained by each belief and the evaluation of that belief are multiplied. These scores are then summed to produce a single attitude ranking. In relation to his model, Fishbein defined attitude as a learned predisposition to respond to an object in a consistently favorable or unfavorable manner.

About the same time that Fishbein was testing his original model, Dulany (1968) was developing his theory of propositional control. This theory proposed to predict and explain behavioral intention based upon two major hypotheses. The response hypothesis is the individual's hypothesis regarding the distribution of reinforcement (e.g., the degree to which the subject thinks a particular response will result in reinforcement or reward). Associated with the response hypothesis is the subjective value of the reinforcer which is the value the subject places on the reward. Secondly, the behavioral hypothesis is the individual's hypothesis regarding the concurrence of a response with group standards (e.g., the degree to which the subject believes that a specific behavior is expected from the subject by one or more referents). The behavioral hypothesis is associated with the motivation to comply which is the degree of the subject's desire to conform to the expectations of the referent(s). Dulany proposes that behavioral intention will approximate behavior providing the independent variables are specific to a given act.

Although he recognized the existence of many additional variables which affect behavior, Dulany contended they were exogenous to the model. These external variables can only indirectly affect behavior by influencing one or more of the model's endogenous or internal variables. According to Dulany's tests of the model, the independent variables are additive and behavioral intention must be included as a moderator. Dulany claimed that the independent variables accounted for fifty to seventy-seven percent of the variance in behavioral intention and that behavioral intention accounted for eighty to eighty-eight percent of the variance in behavior (Dulany, 1968).

An important limitation to Dulany's theory was that all empirical testing was conducted in a laboratory with the variables generally manipulated by an experimenter. As a result, the only source of influence acting upon the formation of behavioral intention was that exerted by the experimenter. Later, Fishbein modified Dulany's theory and took it out of the laboratory and into more realistic settings.

The Fishbein-Ajzen model of behavioral intention, often referred to as the extended Fishbein Model or the Fishbein-Ajzen theory of reasoned action, attempts to predict specific behavior under a given set of conditions. According to Fishbein,

> "the theory is based on the assumption that human beings are usually quite rational and make systematic use of the information available to them. People consider the implications of their actions before they decide to engage or not engage in a given behavior" (1980, p.5).

One of the most significant changes in the extended model is the replacement of attitude toward the object (Ao) with attitude toward the behavior or the act (Aact). Fishbein (1972) stated that the Ao model should not be expected to predict behavioral intentions as consumers do not purchase product attributes, rather, they tend to purchase benefits or expected outcomes. Fishbein suggests that desirable outcomes may be quite different from desirable attributes. For example, a consumer may have a favorable attitude toward smaller cars due to attributes such as fuel efficiency and sporty appearance. However, the attitude toward *driving* a smaller car may produce an unfavorable attitude as the consumer feels unsafe on the road while driving a small vehicle. In this particular case, it is obvious that although there exists a positive attitude toward the object (a smaller car) there is a negative attitude toward an outcome of using the object (lack of safety while driving).

According to the theory of reasoned action the manner in which an individual behaves is often determined by his intentions to perform the behavior. As with the two hypotheses presented in Dulany's theory, Fishbein and Ajzen suggest that intentions are determined by two basic components: a personal factor and a social factor. The personal factor is the subject's positive or negative evaluation of the outcomes of performing a particular behavior. The second factor encompasses the social pressures and expectations experienced by the subject and is, therefore, termed the subjective norm. It implies that individuals are influenced by what they believe people who are most

important to them think they should or should not do. In addition, the motivation to comply with such expectations is also identified as an important element in determining behavioral intention. According to the theory, a subject will likely intend to perform a behavior when their evaluation of the behavior is positive and when important others think he / she should perform it.

The similarities between Dulany's and Fishbein's formulations are easily apparent. The first component of both models is characteristic of the expectancy-value approach discussed earlier. The second component of each model refers to the expectations perceived by the individual by important referents and the motivation to comply with the referents (although in Dulany's case there was only one referent that being the experimenter).

The Fishbein-Ajzen theory provides further value by examining the relative importance of the attitudinal and normative factors in determining behavioral intentions. The relative importance of the two components is likely to vary with the type of behavior, with the situation, and with individual differences between subjects. The task of capturing the relative importance of the two components has been assigned to the weights (i.e., w_1 and w_2 which are usually estimated by multiple regression procedures (see formula on page 34).

Refining the theory further, Fishbein and Ajzen (1975) stated that attitudes are a function of beliefs. The beliefs that underlie an individual's attitude toward a behavior are called behavioral beliefs and the beliefs underlying normative attitudes are normative beliefs. The Fishbein-Ajzen theory begins with these personal beliefs which influence attitudes, both personal and social, resulting in the formation of behavioral intentions. For simplification the theory of reasoned action can be represented by Figure 1. The strength of the relationship between intention and behavior is influenced by three major factors: (1) the specificity of the intentional measure; (2) the time between the measure of intention and the behavioral observation; and (3) the degree to which acting upon the intention is completely under the subject's control. The first factor is considered to be the most important by Fishbein (Bowman & Fishbein, 1978) as it suggests that

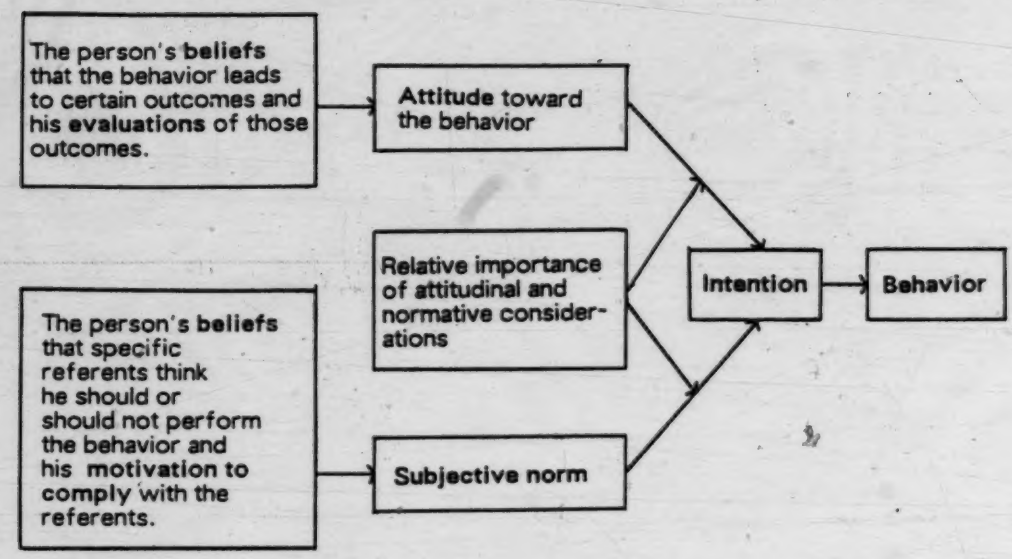

The person's beliefs that the behavior leads to certain outcomes and his evaluations of those outcomes.
Attitude toward the behavior
Relative importance of attitudinal and normative considerations
Intention
Behavior
The person's beliefs that specific referents think he should or should not perform the behavior and his motivation to comply with the referents.
Subjective norm

Figure 1. **The Fishbein-Ajzen Theory of Reasoned Action** (Fishbein & Ajzen, 1980).

it is unfair to expect general intentions to predict specific behaviors, rather, general intentions should only be expected to predict general behaviors. For example, if the behavior under investigation is the lowering of thermostats, then the information gathered should specifically address the beliefs, attitudes and intentions toward lowering the thermostat. The same respondent's beliefs, attitudes and intentions toward reduction of energy consumption in general may be quite different.

Regarding the second factor, Ajzen and Fishbein (1973) stated that intentions are most strongly related to behavior when the time interval between the declared intention and the overt behavior is short.

The third factor stipulates that intentions to perform a behavior are weakened when the individual must rely on others to assist in carrying out the behavior (e.g., "I will

upgrade the insulation in my home *providing the bank will lend me the money*").

Like Dulany, Fishbein and Ajzen recognize external variables and their influence on behavior but only to the extent that they influence the factors determining the behavior and do not directly affect the behavior itself. As discussed below, this is only one of the propositions questioned by other researchers in the field.

Due to the fact that Fishbein and Ajzen developed a theory which states relationships explicitly and can be empirically tested, it is subject to continuing praise and criticism by others investigating the attitude-behavior linkage. Although the theory's ability to successfully predict behavior has been fully or partially supported by many studies (Awad et al., 1982; Wilson, Mathews & Harvey, 1975: Ajzen & Fishbein, 1973, 1975; Bearden & Woodside, 1978; Ryan & Bonfield, 1980), many of the model's perceived weaknesses and inconsistencies are frequently raised.

One of the weaknesses suggested by others involves the role assigned to external variables in the model. Crosby and Muehling (1982) found that among college students, external variables did have a *direct* impact on intentions and were only partially mediated by the attitudinal and normative factors. They claimed they were able to predict intentions to attend arts events not only by attitudinal and normative factors, but also by past behavior, self-concept, awareness, arts interest and demographics. In response to their findings Ajzen and Fishbein (1980) stated that past behavior and personality traits have a direct effect on beliefs which in turn affect attitudes and behavioral intentions. Fishbein also suggested that demographic characteristics may result from past experience and, again, affect intentions by first influencing beliefs and attitudes. The finding that past behavior directly influences present behavior without being mediated by behavioral intentions has also been reported by Bentler and Speckart (1979, 1981). However, Bagozzi (1981) questioned the validity of their findings due to bias introduced by self-reported behavior and the possible habitual nature of the behaviors used in the study. Bagozzi found in his study that if the behavior is of a habitual nature, the performance of the behavior becomes more of a learned response and less of a rational evaluation of the consequences. As a result, use of the Fishbein-Ajzen model may not be an appropriate method of measurement when the behavior contains an habitual element. Such a

phenomenon should have little relevance to the present study due to the non-habitual nature of the behavior under investigation (i.e., purchasing window treatments).

Ahtola (1976) has suggested another weakness of the theory of reasoned action focuses on the attitudinal component. He stated that it might be erroneous to measure this component in terms of the subject's attitude toward the behavior when it is more appropriate to study the subject's attitude toward *himself* performing the behavior. Fishbein has dismissed this criticism as,

> "empirically it turns out that in most cases, a person's attitude toward "performing" a given behavior and his attitude toward "my performing" a given behavior are very highly correlated" (1976, p. 491).

Another perceived weakness of the theory concerns the statistical methods employed in determining the empirical weights assigned to the attitudinal and normative components. Some researchers (Ahtola, 1976; Miniard, 1978) have disagreed that the use of multiple regression in determining the weights is a proper method. Again, Fishbein has countered this comment by stating that,

> "despite some obvious inadequacies, the use of the multiple-regression procedures... has yielded useful and meaningful results and in the absence of a viable alternative I will continue to use this procedure" (1976,p.496).

From the current literature it appears that the normative component of the theory causes researchers, including Fishbein and Ajzen, the most concern. Fishbein admits that this is where the most work is need and Lutz warned that, "this component remains the most serious threat to the validity of the overall model" (1977, p. 206).

The normative component included in the theory of reasoned action has been subject to much doubt in significantly contributing to the model's predictive ability. Glassman and Fitzhenry (1976) pointed out that studies employing the Fishbein-Ajzen model nearly always have resulted with the attitudinal factors being the primary determinant of behavioral intention with weak contribution from the normative component. The authors offered two explanations for this finding. Firstly, the studies investigating the theory have mainly concentrated on topics and behaviors for which attitudinal considerations were in fact dominant. Secondly, one of the determinants of a subject's positive attitude toward performing a behavior could well be the belief that an important referent will be pleased, therefore, normative beliefs may also have an effect on the attitudinal component in determining behavioral intention. Ryan (1982) supported

this argument by suggesting that even though the normative component is assigned a small weight indicating a weak influence on behavioral intention, it may have a strong influence through the mediating effects of the attitudinal component. Ajzen and Fishbein (1981) acknowledged this possibility and suggested that the two components are both "distinct and related" meaning that while they are independent constructs derived from different sets of beliefs, it is still possible for a single belief to affect both components simultaneously. For example, a doctor's advice that exercise is beneficial to your health not only affects the normative component (e.g., My doctor thinks I should/ should not exercise), but also may provide a positive influence on the attitudinal factor resulting in a more favorable attitude toward the act of exercising.

Other studies (Songer-Nocks, 1976; Ajzen & Fishbein, 1970; Ajzen, 1971) have successfully illustrated the importance of the normative component in providing a separate element to the model. In these studies, subjects were instructed to treat another player as a partner (cooperative setting), while others were to try and defeat the other player (competitive setting) within a game situation. The results indicated that during cooperative conditions the normative factor would dominate while attitudinal factors were dominant in competitive conditions.

The theory of reasoned action has also been criticized for failing to provide a formulation that empirically separates the attitudinal and normative influences on behavioral intention (Miniard, 1978; Miniard & Cohen, 1981). Consequently, Miniard (1978) developed and tested a model in which the attitudinal measures attempted to capture the attitudinal influences only and the normative measures captured only the normative social influences. Miniard argued the necessity for such a model as some areas of research need to determine the exact contributions of the attitudinal and normative components in determining behavioral intention. In his study, Miniard (1978) tested his model against the Fishbein-Ajzen model and found the latter to be inferior. Fishbein (1981) questioned the validity of this study as he felt Miniard was not successful in designing manipulations of the attitudinal and normative factors which were separate and nonoverlapping and as a result, there was little or no chance of effectively separating the two influences. Designing situations where the attitudinal and normative factors are separate is not an easy task in view of the distinct but related connection that often exists between them. For the

present study on behavioral intentions toward the use of energy conserving window shades, an exacting separation of the attitudinal and normative influences is not essential. The measures used in the theory of reasoned action, perceived by Miniard as sufficiently providing a general analysis of the contributions of the two components, will be used to obtain accurate analyses.

Another criticism has been directed toward the subjective norm (SN) which is a component of the normative factor. In measuring SN, respondents are asked if those people who are most important to them think they should or should not perform a particular behavior. Ahtola (1976) questioned whether people view important others *collectively* in normal circumstances. He argued that the opinions of different referents may vary and conflict making it difficult for the subject to accurately rate the expectations of a *group* of referents. Fishbein (1976) responded to this problem by stating that through his experience with the subjective norm, the respondents have had no difficulty in responding to questions regarding *most important others*.

Fazio and Zanna (1978) proposed that when predicting behavioral intentions, the attitudinal *qualities* should be considered along with the attitudinal and normative components. In their study they found that the attitude-behavior relationship was influenced by 1) the amount of direct experience upon which the subject's attitude was based; 2) the degree of certainty with which the attitude was held; and 3) how well-defined the subject's attitude was. The results of the study indicated that when an attitude was based upon direct behavioral experience, it was, "both better defined and more confidently held than an attitude formed through more indirect means" (1978, p. 398). Subsequently, attitudes based on direct behavioral experience proved to be better predictors of overt behavior.

In another study (Songer-Nocks, 1975) it was found that neither attitudinal nor normative beliefs were useful in predicting behavior when the subjects had no prior experience with the behavior. Defining what behaviors constitute prior experience may prove difficult in this study due to the variety and similarity of available window treatments. Perhaps attitudinal and normative beliefs are useful in predicting intention when past experience involves selecting window treatments that are similar to the shades used in this study in both appearance and method of operation (e.g., conventional roman

shades and roller blinds), but are not useful when the window treatments are very different in appearance and operation (e.g., pleated draperies and vertical blinds). Or perhaps attitudinal and normative beliefs are only successful in predicting intentions to conserve energy lost through windows when respondents have had prior experience with window products specifically designed to conserve energy. The effect of prior awareness and experience on behavioral intentions to use energy conserving window shades will be addressed in this study.

Attitude and Energy Conserving Behavior

To date most studies designed to demonstrate a causal relationship between attitude toward energy conservation and actual energy conserving behaviors have been unsuccessful (Jaffee, Houston & Olshavsky, 1982; Lowry, 1976; Olsen, 1981). An exception is a study done by Seligman et al. (1979) which found that norms, beliefs, and behavioral intentions which are closely related to *specific* energy-using behaviors are predictive of these behaviors. Ritchie, McDougall and Claxton (1981) provided two reasons why this study was successful in using attitudes to predict behavior. Firstly, potential variance was reduced as all of the respondents in the sample lived in identical townhouses and, therefore, experienced the same dwelling characteristics and similar family demographics. Secondly, the significant factors focused on attitudes specific to the energy application being examined. For example, comfort and health items were used as they are important factors with respect to air conditioning. A third reason for the study's success may be that actual energy consumption levels were measured rather than self-reported behaviors. Previous research has shown that self-reported behaviors are often inaccurate for various reasons (Shippee, 1980).

Energy conservation research focusing on attitudes have indicated that personal judgement (the attitudinal component) has a greater influence on intentions to conserve energy than social pressure (the normative component). Cluett (1979) found that the normative factor (i.e., "I feel obligated to conserve energy because my friends/neighbors are doing it"), received one of the lowest rankings.

In another study which used the Fishbein-Ajzen theory to measure behavioral intention toward energy conservation, Ellison, Ellison and Everett (1981) reported an increase in normative belief from friends to media to government. That is, respondents felt that government believes *most* strongly that consumers should conserve energy. Also, although the respondents generally reported an unwillingness to comply with expectations of friends, media and government, among the three sources the government was perceived as having the greatest influence. This finding directly contradicts the results of a study by Bowman and Fishbein (1978) which claimed that the greater the intimacy of the relationship between the respondent and the source of social influence, the greater the power is to elicit compliance with expectations. A possible explanation for the stronger compliance with government officials may be that the respondents perceived the government as having the most knowledge, concern and active role in energy conserving efforts.

Upon reviewing the literature it appears that more research is needed similar to that performed by Seligman et al. (1979) where specific attitudes are related to specific energy conserving behavioral intentions, or when possible, energy conserving behaviors. With the assistance of the Fishbein-Ajzen model of behavioral intentions, this is a goal of the present study.

B. Factors Affecting Energy Conserving Behavior

This section will describe several major factors affecting the propensity of an individual to engage in energy conserving behaviors. The effectiveness of various energy conservation incentives and some major considerations involving consumer investment in energy efficient technologies for the home will also be reviewed.

The manner in which consumers perceive the energy situation is vital to the energy problem. Although it is obvious that consumer perceptions will have little impact in

altering the limited amounts of world oil and gas deposits, their beliefs and attitudes will greatly affect the type and degree of energy conserving actions they are willing to adopt.

The 1973 oil embargo experienced in the United States also had a sobering effect on Canadian consumers as they were forced to realize that energy sources were limited in their supply; however, the effects of the crisis were short-lived. A longitudinal study performed by Energy, Mines and Resources Canada (1975-1977) found that in 1975 only eight percent of the sample mentioned energy as a problem facing Canada without any prompting. Slightly more than four people out of ten viewed the energy crisis as "very" or "somewhat" serious. In a more recent study by McDougall and Keller (1981), energy shortage was rated last of all issues presented between the years of 1975 to 1980. Compared with other concerns such as inflation, pollution and unemployment, Canadians considered energy shortage the least important.

An interesting insight provided by the study (McDougall & Keller, 1981) was that the cost of energy was tied with unemployment for second place as an important concern in 1980. This suggests that while consumers are finding it increasingly expensive to heat their homes and drive their cars, they do not necessarily equate this with the belief that an energy shortage exists.

The apparent lack of concern or complacency shown by Canadians regarding energy related issues can be partially explained by three factors. Firstly, Canadians are relatively affluent and regard energy as only a small portion of their total expenditures. Consumers generally feel that energy, with the possible exception of car gasoline, is still a fair deal for the money (Rosa, 1978). Another possible explanation for consumer complacency is related to the fact that Canada is often regarded as being one of the richer countries in terms of natural resources and many consumers, either consciously or subconsciously find comfort in such knowledge. Many consumers also hold the belief that if a *real* energy crisis did occur in the future, scientists would solve the problem by developing alternative sources of energy to safe and efficient levels of use (e.g., solar and nuclear energy).

Along with complacency there are other factors inhibiting consumer adoption of energy conserving behaviors. One such factors involves consumer perceptions about where to place *blame* for the energy shortage. Several studies have indicated that the

majority of consumers feel government, industry and sometimes oil companies are responsible for the shortage (McDougall & Keller, 1980; Perlman & Warren, 1977; Hummel, Levitt & Loomis, 1978; Marmorek, 1981). From a sample of Canadian respondents, nearly forty percent perceived the energy shortage to be a hoax created by government, utility companies and major corporations (McDougll & Keller, 1980). In another study many Canadians were not sure who was to blame; the researcher interpreted this finding as consumer understanding that the energy problem is a complex issue involving all members of society, not just one group (Lowry, 1976). It is reasonable to assume that those individuals who do not feel an energy crisis exists or are confused about the issue, are likely to be less willing to adopt energy conserving behaviors.

Other studies indicated that many consumers perceive themselves as major contributors to the energy problem (Gottlieb & Matre, 1975; Hummel et al., 1978; Nietzel & Winett, 1977). These consumers report that they are generally receptive to adopting energy conserving actions, even when they involve changes in lifestyle.

Closely related to assigning responsibility for the energy problem is assigning responsibility for a solution. Whom the consumer views as offering the best solution to the problem is one of the determinants of whether or not he/she will adopt energy conserving behaviors. Many consumers feel finding a solution is mainly the responsibility of government and business but not the consumer (McDougall & Keller, 1980). In contrast, another study reported that respondents were confident that advances in technology combined with changes in consumer life-styles would eventually solve the problem (Nietzel & Winett, 1977). Consumers who blame themselves for the energy shortage due to excessive energy consumption most often cite themselves as the solution but only if everyone becomes involved and any sacrifices are shared equally. However, many Canadians are skeptical that such actions would occur voluntarily and, therefore, are generally more supportive of mandatory conservation policies imposed by government (Nietzel & Winett, 1977).

Another important factor affecting the adoption of energy conserving behavior is the individual's perception of the harmful personal consequences or "noxiousness" that might result from an energy shortage. Increases in perceived noxiousness related to an

energy shortage tend to strengthen intentions to perform energy conserving actions (Hass, Bagley & Rogers, 1975; Hummel et al, 1978).

Somewhat related to the importance of individual efforts is a phenomenon termed *social trap* (Plaat, 1973). Social traps result from situations in which the immediate energy consumption determines behavior and overrides the long-range societal benefits of conservation. That is, the social collective costs and benefits of an individual's actions are distant and seem negligible when compared to the immediate, personal rewards obtained by the behavior. Due to the widespread occurrance of social trap characteristics, it has been suggested that voluntary measures are inadequate and mandatory energy policies are necessary (Hummel et al., 1978).

A related factor contributing to consumer failure in adopting energy conserving actions is the need to show affluence by displaying energy consuming symbols of success. North American ethics tell individuals that one major goal in life is to work hard and make alot of money. Once this goal is achieved, people enjoy publicizing their success with energy-consuming goods and activities (e.g., larger cars, swimming pools). Milstein (1977) stated that people resent being told that they should forgo the symbols of success for which they have worked so hard in order to participate in societal concerns such as the conservation of energy.

A similar argument is presented by Verhage (1978) who posits that each consumer has a list of priorities which is established to achieve desired goals in life. The introduction of energy conserving behaviors or investments may interfere with these priorities and, therefore, require some type of change. Verhage maintains that such changes to the priority network take place very slowly and gradually.

Lack of knowledge regarding how and why consumers should conserve energy is another factor explaining consumer failure to perform energy saving actions (Milstein, 1977). Many consumers are not aware of the need to conserve energy or possess inaccurate information about efficient ways to use energy. For example, nearly half of the respondents in Milstein's study were unaware that yearly, the water heater uses more energy than any other appliance in the home. In a Canadian study many respondents claimed to have a high knowledge of energy facts when it was actually much lower (McDougall, Ritchie & Claxton, 1980). However, lack of knowledge should not reflect

negatively on consumers as it is unrealistic to expect every individual to possess a deep interest or understanding of energy related concerns. According to Miller (1983) there is an overwhelming amount of information available today regarding almost any conceivable subject. Each individual is capable of becoming knowledgable and remaining current in a relatively narrow range of topics in which energy conservation may or may not be included.

With respect to energy conserving behaviors within the home, it has been discovered that one factor is particularily important in the adoption of energy conserving innovations. Leonard-Barton and Rogers (1979) found that intention to invest in energy conserving innovations increased when someone in the home was capable of making repairs to the innovation if necessary. A possible explanation proposed by the researchers for this finding was that the person who is able to repair the item is assumed to have some basic understanding of the mechanics of the innovation as well as its actual energy saving potential. In addition, further savings are recognized if the necessity of incurring repair bills can be avoided.

The preceeding section has outlined several factors affecting consumer adoption of energy conserving behaviors and innovations. Four of these factors seem to be the most powerful predictors of behavioral intentions to conserve energy. The four factors include 1) the perceived noxiousness of an energy shortage; 2) consumer perception about *blame* for the energy problem; 3) consumer perception about the importance of individual efforts and 4) the presence of someone capable of repairing an energy-saving innovation. (The last factor seems particularily appropriate in the present study as respondents many not only be capable of repairing insulative shades, but many may be able to actually construct the item from its basic components.) As a result, this study will attempt to measure the impact of these four beliefs on behavioral intentions to adopt energy conserving window shades.

Due to the general lack of consumer interest in performing energy conserving behaviors, many incentives have been designed to encourage such actions. The effectiveness of each of these incentives in actually influencing behavior seems to vary

from one study to the next. For example, some findings indicate that simply providing information about energy conservation to the consumer is an effective way to reduce energy consumption (Olsen & Cluett, 1979), while others do not (Winett, Batallio & Winkler, 1978; Geller, 1981; Milstein, 1977). Providing feedback to consumers about the amounts of energy being consumed in their homes and how their consumption levels compare with other households in the area has been suggested as an effective incentive by some researchers (Pallack & Cunningham, 1976), but this is not the case according to others (Winett et al., 1978). Some studies suggest that monetary incentives such as rebates, tax credits and low-interest loans encourage energy conservation (Winett et al., 1978; Ellsion, Ellison & Everett, 1983), while other studies support policies which combine monetary incentives with energy conservation information (Peck & Doering, 1976; Geller, 1981). Other researchers claim that higher energy costs along with monetary incentives are required (Cunningham & Lopreato, 1977), however, there is some doubt that higher prices will discourage energy consumption (Stern & Gardner, 1981; Verhage, 1978; El Mallakh, 1978). Social approval and commendation have also been suggested as effective methods for encouraging energy conserving behavior (Seaver & Patterson, 1976; Allen, 1982).

The lack of consistency among these research findings may be caused by the wide assortment of energy conserving behaviors under examination. It is reasonable to assume that the most effective incentive to conserve energy will vary with the behavior in question. It is hoped that the information gained from the present study will provide some direction for future home energy conservation policies.

Factors Affecting Energy Conservation in the Home

Research has also been conducted specifically concerning energy saving investments in the home (Anderson & Claxton, 1982; Olsen & Cluett, 1979; Stern & Gardner, 1981; Pitts & Wittenbach, 1981). According to these studies, a homeowner should be willing to invest in energy saving technologies until the additional cost of the investment is matched by the dollar savings from that investment. However, there are many other factors influencing a consumer's decision to invest in energy conserving

improvements. These factors include the financial ability to make the purchase, the pay-back period of the investment, problems in finding the desired items, skepticism about technological claims, doubts about the competence of installers, and the entire, time-consuming ordeal of making changes in windows, walls, attics and heating systems (Pitts & Wittenbach, 1981; Jacoby, 1976). Having to consider a large number of factors in one decision provides a barrier for many consumers to conserve energy. In a study by Houston (1983), approximately one-third of the respondents lacked the skills necessary to comprehend and analyse an energy-saving investment opportunity. As a result of their confusion and hesitation, these consumers were less likely to make the energy-saving investment.

Two other factors are recognized by Stern & Gardner (1981) which influence energy conserving behaviors within the home. The first factor distinguishes between behaviors that modify people's use of energy systems which are already in place (e.g., using dishwasher only when full) and those which conserve energy by adopting more energy-efficient technologies (e.g., energy efficient dishwasher). The authors suggest that those behaviors involving energy -efficient technology offer greater energy conservation potential than those behaviors relying on curtailed use of existing energy systems. According to this distinction, insulative shades offer good energy saving potential as they are considered an energy efficient technology requiring little if any behavioral change.

The second factor distinguishes between those behaviors which need to be continually repeated in order to save energy (e.g., raising and lowering thermostat) and those which are one-shot actions (e.g., wall insulation). Stern & Gardner (1981) suggest that one-shot actions offer greater potential to conserve energy than do repeated actions. The addition of insulative shades in a home mainly represent a one-shot action, however, the operation of the shades may be considered to also involve an element of repeated action (i.e., raising and lowering the shade).

Profiling the Energy Conscious Consumer

Over the past decade, several studies have attempted to tease out the personality, demographic and socio -economic traits which might be common among individuals who exhibit socially responsible behavior. According to Webster a socially conscious consumer is one who, "takes into account the public consequences of his or her private consumption or who attempts to use his or her purchasing power to bring about social change" (1975, p. 188).

It has been reported that thirty-four percent of the Canadian population display energy-conscious characteristics (Lowry, 1976). Eventhough this represents less than half of the population the impact of this group may be impressive as energy conscious consumers often possess many of the same characteristics as opinion leaders and, therefore, may have potential in influencing the behaviors of others (Lowry, 1976).

Some attempts to use demographic and socio-economic variables as predictors of energy conscious consumers have been unsuccessful (Hummel et al., 1978; McDougall, Ritchie & Claxton, 1980), while others report they provide some predictive power (Shippee, 1980). For example, it has been found that income is significantly associated with energy conservation consciousness (Heslop, Moran & Cousineau, 1981). An interesting finding is that the groups at either end of the income scale are least likely to engage in energy conserving actions. According to Verhage (1978), it is reasonable to assume that the higher income groups have little economic motivation to reduce energy expenditures while the lower income groups are already consuming a minimal amount of energy and are unable to conserve any more. Therefore, the middle income segment is the one which is likely to adopt energy conserving behaviors.

Not surprisingly as income is often a function of education, it has been reported that those individuals with higher education experience greater energy concerns (Farhar et al., 1979; Schnorr, 1979). To date, it has not been shown that other demographic and socio-economic characteristics such as age, sex, occupation or political affiliation are associated with energy conscious behaviors (Bowman & Fishbein, 1978). This study will attempt to determine if those respondents who report intentions to use or are currently using insulative shades share any common demographic and/or socio-economic characteristics.

Summary

Findings in related literature suggest that much work is still required in refining and clarifying the relationship between attitude and behavior. There are several causes for the lack of consistency between reported attitudes and actual behaviors which are related to problems with measurement as well as the presence of many internal and external factors acting upon individual consumers. The beliefs held by individuals regarding the energy issue are very important in determining their willingness to adopt energy conserving products and behaviors. As investing in energy efficient home improvements is often a complicated and confusing process, many consumers are unable to analyse and resolve such decisions. Attempts to define the demographic and socio-economic characteristics of the energy conscious consumer have been unsuccessful. There is some evidence to suggest that energy conscious consumers are generally better educated and earn higher incomes.

III. METHODS AND PROCEDURES

This chapter describes the conceptual framework, selection of subjects, description of the instrument, methods of data collection and methods of data analyses.

A. Conceptual Framework

The conceptual framework used in this study is the Fishbein-Ajzen model of behavioral intentions as incorporated in the Engel, Kollat and Blackwell (EKB) model of consumer behavior (Engel & Blackwell, 1982). The EKB model describes a decision process comprised of the following five stages; 1) problem recognition 2) search 3) alternative evaluation 4) choice 5) outcome.

For this study the relevant stage is alternative evaluation. The EKB model proposes that alternative evaluation begins with evaluative criteria which are the criteria used by consumers to evaluate products. The consumer compares the information he possesses from the search stage against the evaluative criteria, and as a result, beliefs are formed regarding the competing alternatives with respect to each criteria. The consumer then positively or negatively evaluates each belief which leads to the formation of an attitude toward the alternative. If the attitude is the most favorable it is followed by a purchase intention. Also influencing intention is normative compliance which is the pressure exerted by important referents such as family and friends. The model also suggests that past experience with a product, whether good or bad, feeds back into the model and affects beliefs. This is relevant to the present study as a small portion of the sample have had previous personal experience with insulative shades.

Like Fishbein, the EKB model takes into account the importance of unforeseen circumstances which may override intention and directly influence choice or behavior. However, as this study did not observe actual behavior, it is unable to observe the effects of unanticipated circumstances on choice. Essentially the EKB model has incorporated most of the major components of the FishbeinAjzen model as shown in Figure 2.

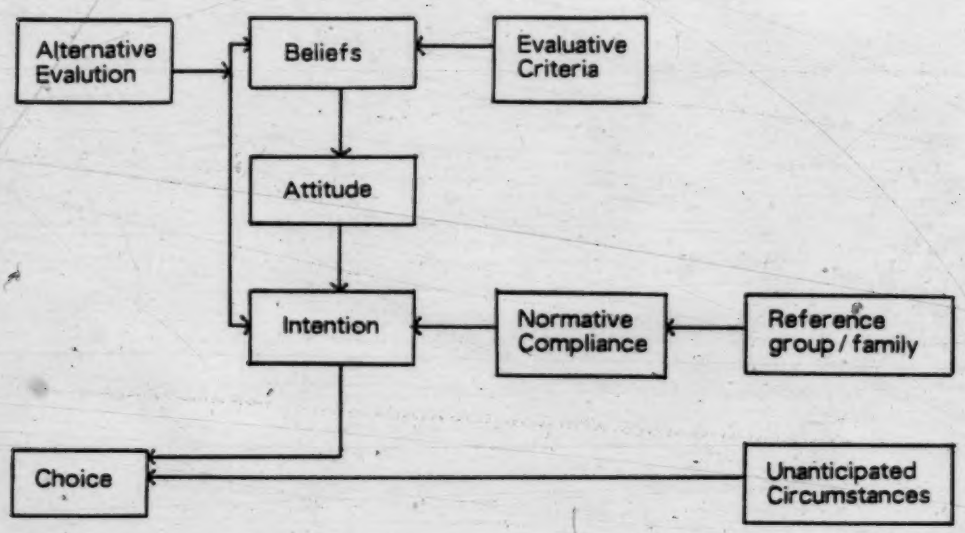


Figure 2. Alternative Evaluation and Choice Stages of the EKB model

The EKB model (Engel & Blackwell, 1982), makes an important distinction between situations of high and low involvement. A high involvement situation is one in which the consumer experiences alternative evaluation before making a choice (as in Figure 2). In contrast, a low involvement situation is one where alternative evaluation is performed following choice. As the alternatives used in this study (i.e., insulative shades) are considered costly and reflect one's self -image (as household furnishings often do), this situation should be considered one of high involvement. The intention to use insulative shades will be measured by the Fishbein-Ajzen model of behavioral intentions. The development and propositions contained in the model are outlined in Chapter 2. The Fishbein-Ajzen model is represented by the following equation:

$$B \approx BI = Aactw_1 + SNw_2$$

where:

B = behavior
BI = behavioral intention
Aact = attitude toward the outcome of performing the behavior
SN = subjective norm
w_1
w_2 = emperically determined weights

Attitude toward the behavior (Aact) can be measured directly or broken down into two components for an additional measurement:

$$Aact = \sum_{i=1}^{n} B_i e_i$$

where:

Aact = attitude toward the act or behavior
B_i = belief that the behavior will lead to consequence i
e_i = evaluation of consequence i
n = number of beliefs

Subjective norm can also be measured directly or broken down into two components for an additional measurement:

$$SN = \sum_{i=1}^{n} Nb_j Mc_j$$

where:

SN = subjective norm
NB_j = normative belief (a person's belief that reference group j or individual j thinks he should or should not perform the behavior)
Mc_j = motivation to comply with referent j
j = the number of relevent reference groups or individuals

Following the Fishbein-Ajzen model, the attitude toward purchasing insulative window shades (Aact) was measured directly and by the product of Bi and ei, respectively beliefs about the outcome of performing the behavior and the evaluation of the outcomes. Subjective norm (SN) is the product of NB: (the normative beliefs that referents expect the subject to perform the behavior) and Mc: (the subject's motivation to comply with the

referents' expectations). Appropriate referents were identified in earlier research by Horne and Crown (1983).

B. Selection of Sample

A questionnaire was administered to a judgment sample of 128 consumers (mainly homeowners) in the vicinity of Edmonton, Alberta. Homeowners have been singled out (as opposed to apartment and house renters) as they exhibit the greatest potential in terms of energy conservation for the following reasons. Firstly, homeowners are generally less mobile than non-homeowners and consequently are more willing to invest in home improvements. Secondly, homeowners demonstrate greater energy concerns as they are required to pay energy costs directly. (In many cases, some if not all of the energy costs are included in monthly rents for apartment and house renters.) Lastly, homeowners largely represent the middle class segment of society which have been identified as the segment with the most motivation to conserve energy.

In selecting the sample the researcher attempted to obtain approximately the same number of respondents in each of the following groups:

A - no exposure to educational programs;
no past experience with product

B - exposure to educational programs;
no past experience with product

C - past experience with product

To obtain the above stratified sample, subjects were selected on the basis of membership in community groups and/or participation in certain educational workshops. An attempt was made to ensure a similar range of demographic and socio-economic characteristics within each of the three groups.

C. Description of the Instrument

A self-administered questionnaire (Appendix B) was designed based on the procedures outlined by Ajzen and Fishbein (1980). It utilized bi-polar, seven-point Likert-type scales intended to measure the variables in the Fishbein-Ajzen model with +3 indicating strong agreement with the statement and -3 indicating strong disagreement.

Another group of questions addressed four sets of beliefs affecting behavioral intentions which were not included in the Fishbein-Ajzen model. Subjects were asked to indicate their responses using a uni-polar, seven-point Likert type scale with 1 indicating strong agreement with the statement and 7 indicating strong disagreement. In addition, several demographic and socio-economic items were included.

Pretesting of the questionnaire was carried out in January, 1984 using a convenience sample as respondents. The reliability of the instrument was also tested by having the same convenience sample answer the questionnaire twice with a two week period in between. Pearson product-moment correlations were conducted on an item by item basis. The results of these analyses are provided in Appendix B.

D. Data Collection

The questionnaire was self-administered by subjects while in their group setting. Every group was presented with mock-ups of five window shades along with an objective, technical description of each product (Appendix C). Questions from the respondents about the window shades were addressed following completion of the questionnaires. Participation in the survey was voluntary and this was stressed along with the confidentiality of results. Respondents were identified in the data file only by a numerical code.

E. Data Analyses

Data, which were at nominal and interval levels of measurement, were coded and entered into the University of Alberta's computer. Data analyses was conducted using the SPSSx package of programs (SPSSx User's Guide, 1983). Characteristics of the sample were described using frequencies.

Hypothesis 1: Both the measured and calculated values for Aact and SN were determined by responses to scale items. The measured and calculated values for Aact were then entered stepwise into a multiple regression analysis with the measured Aact as dependent and with the order of entry of the independent variables determined by the computer program. The same process was used in a separate regression analysis for the measured and calculated values of SN.

Hypothesis 2: The model's components (Aact and SN) were determined by responses to scale items. Aact and SN were then entered stepwise into a multiple regression equation to calculate w_1 and w_2 and predict behavioral intention (BI). The order that Aact and SN were entered into the regression equation was controlled by the researcher. The three measures of Aact were entered into the equation before SN in one analysis but were later entered after SN in a second analysis. This was done to determine the extent of interaction (if any) between Aact and SN.

Hypothesis 3: Associations between general energy conserving beliefs and attitudes (as measured by the general level Fishbein scales) and behavioral intention toward using insulative shades (intermediate level) was determined through Pearson Product-Moment Correlation analyses.

Hypothesis 4: The association between exposure to energy conservation education and/or experience with insulative shades and subjects' awareness of and perceived need for such products was determined using chi-square analyses. The effect that exposure to energy conservation education and/or experience with insulative shades has on a) four major energy related beliefs and b) the beliefs and attitudes toward insulative shades in

particular, was determined by using analysis of variance.

Two different records of the respondents' exposure to energy education were taken. The first was recorded by the researcher (Analysis 1) while the second was reported by the respondents (Analysis 2). The level of education was recorded by the researcher because some respondents did not record themselves as being energy educated if they were attending an energy related workshop or seminar for the first time. These respondents were coded by the researcher as being energy educated for Analysis 1 as the questionnaires were not distributed until the completion of the energy workshop.

IV. FINDINGS

This chapter provides a profile of the respondents used in the study, and also examines descriptive and statistical analyses of the variables and hypotheses. A 0.05 level of significance was used for the testing of hypotheses.

A. Profile of the Respondents

A total of 128 respondents completed a questionnaire for this study. After eliminating unusable questionnaires, the data obtained from 122 respondents were used.

Tables 2 and 3 describe the demographic and socio-economic characteristics of the subjects. A majority of the respondents were female (66%) and most were married (76%). Approximately 28% of the sample did not supply information on their total household income. For the remaining portion of the sample, 13% earned under $21,999, 35% earned between $22,000 and $49,999, and 23% earned $50,000 or more annually. The modal response for the level of education was a vocational/technical diploma or incomplete university followed closely by a university bachelor's degree. Approximately half of the sample was employed full-time outside of the home while 25% worked in the home. The main categories of employment for those working outside the home were professionals or skilled crafts and trades people. As shown in Table 2(a), the mean age of the sample was 39.5 years and the mean number of years in school was 14 years.

As hoped for at the outset of the study, most of the respondents owned their own home or condominium (Table 2). The sample was nearly divided equally three ways in residence location as 28% lived in Edmonton, 37% lived in a village, town or city other than Edmonton, and the remaining 35% lived on farms. Table 3 shows the geographic locations of the different groups used in the study.

As shown in Table 4, 52% of the respondents had received some kind of energy conservation related education (Analysis 1). Approximately three-quarters of the sample

Table 2

Profile of Respondents

(n = 112)

	Frequency	Percent
Sex		
female	81	66
male	31	25
unknown	10	8
Marital Status		
married	93	76
single	18	15
unknown	11	9
Total Household Income		
under 10,000	4	3
10,000 - 21,999	12	10
22,000 - 33,999	23	18
34,000 - 49,999	21	17
50,000 - 69,999	15	12
over 70,000	13	11
unknown	34	28

	Frequency	Percent
Education		
some elem. of complete	0	0
some jr. high or complete	2	2
incomplete sr. high	21	17
complete sr. high	25	21
diploma or some univ.	34	28
Bachelor's degree	28	23
advanced or medical degree	6	5
unknown	6	5
Employment Status		
employed full-time	55	45
employed part-time	12	10
unemployed	5	4
retired	5	4
in school	2	2
keeping house	28	23
other	5	4
unknown	10	8

continued . . .

Table 2 (cont'd)

Profile of Respondents

(n = 112)

	Frequency	Percent
Occupation		
self employed professional or employed professional	18	15
high level management or semi-professional	9	7
middle management or supervisors	7	6
skilled clerical/sales/services or skilled crafts and trades	16	13
farmers	8	7
semi-skilled or unskilleld clerical/sales/ services or manual	8	7
housewife	31	25
retired	6	5
student	2	2
unknown	17	14
Residence		
own house	89	73
own condominium	2	2
rent house/apartment	19	16
unknown	12	10
Location of Residence		
Edmonton	31	25
other village, town or city	41	34
farm/acreage	39	32
unknown	11	9

Table 2 (a)

Profile of Respondents (cont'd)

(n = 102)

	Mean	Range	Std. Dev.
Age in years	39.70	16 - 72	12.70
Years of schooling	14.01	8 - 22	2.67

Table 3

Geographic Distribution of Respondents

Groups in Alberta	No. of Respondents	Percent
Castor	17	14
Ranfurley	7	6
Edmonton (Women Art Gallery meeting)	7	6
Westlock	13	11
Tofield	10	8
Edmonton (University Women's Investment Club)	15	12
Edmonton (C.H.A.P. meeting)	12	10
Calmar	13	11
Beaumont	5	4
Bon Accord	8	6
Vermillion	10	8
Edmonton (Edmonton Book Club)	5	4
Total	122	100

denotes energy related workshop/seminar/lecture

Table 4

Energy Conservation Education/Experience of Respondents

	No. of Respondents	Percent
Analysis 1: Researcher Determined		
energy educated	64	52
not energy educated	58	48
Analysis 2: Self-reported by respondents		
Have attended energy workshops		
never	73	60
occasionally	44	36
frequently	5	4
Have seen or heard of insulative shades		
never	35	29
occasionally	72	59
frequently	15	12
Have used insulative shades		
yes	12	10
no	110	90

Table 5

Perceived Need for Insulative Shades

	Mean	Std. Dev.
Window heat loss is not serious	5.1	1.9
Should be concerned about window heat loss	2.2	1.2

indicated they had seen or heard of insulative shades, and 10% said they had actually used such products in their home. Most of the respondents indicated that they should be concerned about the amount of heat lost through their windows, however, nearly 25% also stated that they did not consider windows to be a serious source of heat loss in their home (Table 5).

B. The Fishbein-Ajzen Model of Behavioral Intention

The Fishbein-Ajzen theory of reasoned action was used in this study to determine the behavioral intentions of the sample toward conserving energy in the home, using insulative shades, and using a specific insulative shades. Tables 6 through 9 show the frequency of responses to the various components of the model. Subjects recorded their responses on seven-point, Likert-type scales which were bi-polar (i.e. range from 3 to -3) as opposed to uni-polar (i.e. range from 1 to 7).

As the results in Table 6 indicate, respondents expressed intentions to conserve energy in their home; however, these intentions were weak. Most of the sample strongly agreed that conserving energy in the home was good, sensible and beneficial (mean=2.7). Although many respondents indicated that reducing national energy consumption was good and necessary, their response to the belief that home energy conservation would help to attain that goal (belief 1) was less positive. The respondents also felt that lowering monthly energy costs in the home was both good and necessary and were equally positive that they could do this by practicing home energy conservation.

Most of the respondents felt that they were expected by their important referents to conserve energy in the home. In this study, four different referents were used: spouse, family, friends and government officials. Out of these referents, the spouse was ranked as the referent who thinks most strongly that the respondent should conserve energy in the home, followed by government officials, family and friends. However, when asked to indicate their motivation to comply with the expectations of these referents, the respondents indicated that their family was the referent they were most likely to comply with, followed closely by their spouse, with government officials and

Table 6

Responses to the Components of the General Level, Fishbein-Ajzen Model: Conserving Energy in the Home

Component	Mean (range=3to-3)	Std. Dev.
Behavioral intention	1.4	1.4
Attitude toward the act (good/bad)	2.7	0.8
(sensible/foolish)	2.7	0.9
(beneficial/harmful)	2.7	0.7
Reduce national consumption belief	1.7	1.4
Save money belief	2.3	1.2
Evaluation 1(a) (good/bad)	2.4	1.0
Evaluation 1(b) (necessary/unimportant)	2.3	1.1
Evaluation 2(a) (good/bad)	2.6	0.8
Evaluation 2(b) (necessary/unimportant)	2.3	1.1
Subjective norm	1.5	1.4
Normative belief (spouse)	1.8	1.6
(family)	1.3	1.8
(friends)	0.9	1.7
(government officials)	1.6	1.7
Motivation to comply (spouse)	2.0	1.1
(family)	2.1	0.9
(friends)	1.5	1.1
(government officials)	1.5	1.1

friends further behind.

Table 7 shows the results of the intermediate level of behavior which examined intentions toward the use of insulative shades in the home. When asked if they intended to use some type of insulative shade the next time they required window coverings, the responses were neutral on average. Although fewer subjects responded on the negative side of the scale (i.e., between -1 and -3), their responses were more extreme (i.e. closer to -3) than were the positive responses. The respondents' attitude toward the act of using insulative shades was positive, however, it was substantially lower than the general attitude of conserving energy in the home. Also, the standard deviation at the intermediate level was much larger than at the general level, indicating greater variance in responses.

At the intermediate level, the insulative shades were evaluated on seven possibly salient attributes; cost, attractiveness, energy efficiency, physical comfort, ease of operation, repair and construction. As indicated in Table 7, most of the subjects strongly agreed that window coverings purchased for their home *should* be competitive in all of these attributes (evaluation component). Respondents, however, saw the insulative shades on display as performing well on only two of these: energy efficiency and physical comfort (belief component). Insulative shades compared less favorably to other window coverings in their ability to compete in cost, on their level of attractiveness, and their ease of construction.

Respondents were almost neutral in their response to the subjective norm regarding the use of insulative shades. Government officials were perceived as the referent which thinks most strongly that respondents should use insulative shades in the home. Spouse followed government officials while family and friends received negative values. The responses for motivation to comply with important referents for the intermediate level were obtained from the general level responses.

For the specific level of behavioral intentions, each respondent was asked to select the insulative shade he/she thought was the best and compare it to the other shades on display. Table 8 shows the number of times each of the five shades on display

Table 7

Responses to the Components of the Intermediate Level, Fishbein-Ajzen Model: Using Insulative Shades

Component	Mean (range=3to-3)	Std. Dev.
Behavioral intention	0.0	2.0
Attitude toward the act (good/bad)	1.7	1.5
(sensible/foolish)	1.7	1.4
(beneficial/harmful)	1.9	1.3
Cost belief	0.0	1.9
Operation belief	0.9	1.9
Repair belief	0.4	1.8
Construction belief	0.1	1.9
Attractiveness belief	0.1	1.9
Energy efficiency belief	2.1	1.2
Physical comfort belief	1.6	1.7
Cost evaluation (good/bad)	2.1	1.2
(necessary/unimportant)	1.5	1.6
Operation evaluation (good/bad)	2.5	0.8
(necessary/unimportant)	2.5	1.0
Repair evaluation (good/bad)	2.6	0.7
(necessary/unimportant)	2.6	0.7
Construction evaluation (good/bad)	2.1	1.3
(necessary/unimportant)	1.8	1.6
Attractiveness evaluation (good/bad)	2.5	0.9
(necessary/unimportant)	2.1	1.2
Energy efficiency evaluation (good/bad)	2.3	1.1
(necessary/unimportant)	1.9	1.4
Physical comfort evalution (good/bad)	2.3	0.8
(necessary/unimportant)	2.1	1.2
Subjective norm	0.3	1.6
Normative belief (spouse)	0.0	1.8
(family)	-0.3	1.6
(friends)	-0.5	1.6
(government officials)	0.3	1.9

continued ...

Table 7 (cont'd)

Responses to the Components of the Intermediate Level, Fishbein-Ajzen Model: Using Insulative Shades

Component		Mean (range=3to-3)	Std. Dev.
Motivation to comply[a]	(spouse)	2.0	1.1
	(family)	2.1	0.9
	(friends)	1.5	1.1
	(government officials)	1.5	1.1

[a] All motivation to comply figures obtained from general level results.

Table 8

Frequency of Shade Selection

Shade	Frequency	Percent
A - Window Quilt: roller blind operation	75	62
B - Window Quilt: velcro seals on four sides	4	3
C - Sunergy Sunseal: roller operation	30	25
D - Window Warmer: magnetic tape seal	13	11
E - Window Warmer: wooden side clamps	0	0

was selected. The respondents' intentions to purchase their selected shade or something very similar, were positive but weak on average (Table 9). Attitudes toward using Shade X in the home were almost identical to attitudes toward using insulative shades in the home. When compared to the other shades on display, the selected shade was often believed to be easier to operate. It was also perceived as being more attractive than the others. However, the selected shade received slightly negative ratings when compared on cost and ease of repair and construction. These beliefs likely reflect the attributes of Shade A which was the shade selected much more often than the others on display.

The subjective norm value was slightly positive but less than the value obtained for the intermediate level of behavioral intentions. The normative beliefs and motivation to comply values for the specific level were taken from the intermediate and general levels, respectively.

C. Four Sets of Energy Related Beliefs Outside of the Model

In the review of literature, four sets of energy related beliefs were identified as influencing consumer adoption of energy conserving behavior. The four sets of beliefs were regarding the ability to repair or construct an energy efficient product, responsibility or blame for the energy problem, personal consequences of an energy shortage, and the importance of individual efforts to conserve energy. Table 10 summarizes the responses to the fourteen items used in measuring these four sets of beliefs. For eight of the items, the means centered around the middle of the scale indicating that respondents did not strongly agree or disagree with the statements, or that respondents were equally divided on either side of the scale. As the standard deviation was relatively large, the latter explanation is supported. The remaining six statements did, however, elicit stronger responses from the sample. For example, agreement with the statement suggesting that many factors were to blame for the energy problem was stronger than other beliefs which implicated specific groups or factors. There was also a tendency to agree with all three statements which suggested the energy shortage would affect an individual's lifestyle (e.g. personal inconvenience, finances). There was also agreement

Table 9

Responses to the Components of the Specific Level, Fishbein-Ajzen Model: Using Shade X

Component	Mean (range=3to-3)	Std. Dev.
Behavioral intention	0.3	2.1
Attitude toward the act (good/bad)	1.6	1.6
(sensible/foolish)	1.7	1.3
(beneficial/harmful)	1.9	1.2
Attractiveness belief	0.8	1.8
Operation belief	1.2	1.7
Energy efficiency belief	0.8	1.7
Cost belief	-0.1	2.1
Repair belief	-0.2	1.9
Construction belief	-0.1	2.0
Physical comfort belief	0.5	1.8
Attractiveness evaluation[a] (good/bad)	2.5	0.9
(necessary/unimportant)	2.1	1.2
Operation evaluation (good/bad)	2.5	0.8
(necessary/unimportant)	2.5	1.0
Energy efficiency evaluation (good/bad)	2.3	1.1
(necessary/unimportant)	1.9	1.4
Cost evaluation (good/bad)	2.1	1.2
(necessary/unimportant	1.5	1.6
Repair evaluation (good/bad)	2.6	0.7
(necessary/unimportant)	2.6	0.7
Construction evaluation (good/bad)	2.1	1.3
(necessary/unimportant)	1.8	1.6
Physical comfort evaluation (good/bad)	2.3	0.8
(necessary/unimportant)	2.1	1.2
Subjective norm	0.1	1.6
Normative belief[a] (spouse)	0.0	1.8
(family)	-0.3	1.6
(friends)	-0.5	1.6
(government officials)	0.3	1.9

continued ...

Table 9 (cont'd)

Responses to the Components of the Specific Level, Fishbein-Ajzen Model: Using Shade X

Component		Mean (range=3to-3)	Std. Dev.
Motivation to comply[b]	(spouse)	2.0	1.1
	(family)	2.1	0.9
	(friends)	1.5	1.1
	(government officials)	1.5	1.1

[a] All evaluation and normative belief figures obtained from intermediate level results.

[b] All motivation to comply figures obtained from general level results.

Table 10

General Beliefs Outside of the Fishbein-Ajzen Model

Belief	Mean (range=1to7)	Std. Dev.
1. Repair/Make Product:		
owner can repair product	3.1	1.8
owner can make product	3.0	1.7
2. Blame for Energy Shortage:		
individual over consumption	3.3	1.7
world shortage of fuel	4.6	1.8
energy crisis is a hoax	4.5	1.8
many complicated factors	2.7	1.6
lack of government policy	3.6	1.6
control by oil companies	3.4	1.7
3. Personal Consequences of Shortage:		
cause personal inconvenience	2.2	1.5
personal lifestyle affected	2.3	1.5
finances affected	2.5	1.5
4. Importance of Individual Efforts to Conserve Energy:		
will not impact energy issue	4.3	1.9
won't affect availability of energy	4.2	1.8
will impact energy issue significantly	2.4	1.4

with one of the items which suggested that individual efforts to conserve energy would significantly affect the nation's overall energy consumption. Finally, respondents indicated that they would be somewhat more likely to invest in an energy efficient product if someone in the house could make it.

Pearson product-moment correlations were performed to determine if associations exist between each of these energy related beliefs and intentions on all three levels. The results of these analyses (Table 11) indicate that the highest correlation was between the belief that individual overconsumption is largely responsible for the energy problem and intention to conserve energy in the home. Relatively strong associations were also found between this same belief and intentions to use insulative shades and Shade X. Some of the other beliefs about responsibility for the energy problem were significantly correlated with energy conserving intentions but the correlations were quite weak. Nearly all of the beliefs regarding the importance of individual efforts to conserve energy were significantly correlated, however, only one of these beliefs showed a strong correlation. None of the beliefs about the personal consequences of an energy shortage were significantly correlated with any of the levels of behavioral intention. There were significant correlations between the ability to repair or construct an energy efficient product and behavioral intention with the strongest correlation found between the ability to repair a product and intentions to use insulative shades (intermediate level).

Two questionnaire items were designed to determine the level of concern regarding the amount of heat lost through windows. Again, a Pearson product-moment correlation was performed to determine if associations exist between the respondents' perceived need to insulate their windows and their intentions on all three levels of behavior. The results (Table 11), indicate that a relatively strong and significant correlation does exist between one of the items regarding perceived need and all three levels of behavioral intention.

Table 11

Pearson Product-Moment Correlations between BI and a) Four Major Energy Related Beliefs and b) Perceived Need for Insulative Shades

Belief	Behavioral Intention: General R	General Sig	Inter. R	Inter. Sig	Specific R	Specific Sig
1) Blame for energy shortage:						
individual overconsumption	.33	.000***	.25	.003**	.25	.003**
world wide shortage	.11	.117	.20	.013*	.22	.008**
crisis is a hoax	-.18	.027*	-.19	.018*	-.20	.014*
many complicated factors	-.01	.455	-.06	.244	-.08	.194
lack of government policy	.01	.164	-.07	.203	-.02	.429
oil company manipulations	.05	.289	.11	.118	.14	.056
2) Importance of Individual Efforts						
will not impact energy issue	-.21	.010*	-.16	.044*	-.15	.054
won't affect availability of energy	-.20	.014*	-.09	.160	-.19	.019*
will impact energy issue significantly	.19	.019*	.15	.051	.31	.000***
3) Personal Consequences of a Shortage:						
cause personal inconvenience	.07	.237	.05	.278	.09	.174
personal lifestyle would be affected	.02	.406	.05	.299	.02	.415
would have financial affects	.09	.156	.06	.262	.09	.160
4) Ability to Repair/ Construct Product						
ability to repair product	.13	.076	.29	.001**	.21	.011*
ability to construct product	.15	.050*	.22	.007**	.13	.073
Window heat loss is <u>not</u> serious	-.14	.060	.04	.331	-.09	.151
Should be concerned about window heat loss	.28	.001**	.34	.000***	.31	.000***

***p<.001
**p<.01
*p<.05

D. Testing of Null Hypotheses

Null Hypothesis 1(a):

There is no significant relationship between beliefs and evaluations about the outcome of performing a behavior (calculated Aact) and the measured attitudes (measured Aact) for the behavior of:

(i) conserving energy in the home (general)
(ii) using insulative shades (intermediate)
(iii) using Shade X (specific)

Table 12 shows the results of a stepwise regression analyses to test Hypothesis 1(a). At the general level of Aact, there is a significant but weak relationship between each of the three attitude measures (measured Aact) and the belief and evaluation components (calculated Aact).

Similar results were obtained at the intermediate level but the relationship between measured Aact and calculated Aact was stronger.

At the specific behavioral level, only two of the scales measuring Aact were significantly related to calculated Aact, however, the strength of these relationships was somewthat weaker than at the intermediate level. As shown in Table 12, the scale used to measure Aact using the descriptors "beneficial / harmful" was significantly related to only one component of the calculated Aact.

In summary, Null Hypothesis 1(a) is rejected due to the aforementioned significant regressions.

Null Hypothesis 1(b):

There is no significant relationship between normative beliefs and motivation to comply (calculated SN) and the measured subjective norm (measured SN) for the behaviors of:

(i) conserving energy in the home (general)
(ii) using insulative shades (intermediate)
(iii) using Shade X (specific)

Table 13 shows the results of stepwise multiple regression analyses to determine if the above relationships exist. The analyses indicate that there is a fairly strong relationship between measured SN and calculated SN at the general level of behavior. The relationship between these two variables is slightly stronger at the intermediate level

Table 12

Regression of Measured Aact on Calculated Aact

Measured Aact	Calculated Aact (belief x evaluation)	R	R^2	Sig.
General - conserving energy in the home				
good/bad				
	step 1 - lower monthly energy costs x good/bad	0.39	0.15	.000
	step 2 - other components	0.41	0.17	.001
sensible/foolish				
	step 1 - lower monthly energy costs x good/bad	0.38	0.14	.000
	step 2 - other components	0.42	0.18	.001
beneficial/harmful				
	step 1 - lower monthly energy costs x good/bad	0.39	0.15	.000
	step 2 - other components	0.42	0.17	.002
Intermediate - using insulative shades				
good/bad				
	step 1 - reduce home energy loss x necessary/unimportant	0.71	0.51	.000
	step 2 - increase physical comfort x good/bad	0.73	0.54	.000
	step 3 - other components	0.80	0.64	.000
sensible/foolish				
	step 1 - increase physical comfort x necessary/ unimportant	0.56	0.31	.000
	step 2 - reduce home energy x necessary/unimportant	0.60	0.36	.000
	step 3 - other components	0.64	0.41	.000

continued . . .

Table 12 (cont'd)

Regression of Measured Aact on Calculated Aact

Measured Aact	Calculated Aact (belief x evaluation)	R	R^2	Sig.
beneficial/harmful				
	step 1 - reduce home energy loss x necessary	0.68	0.46	.000
	step 2 - other components	0.75	0.56	.000
Specific - using shade x				
good/bad				
	step 1 - attractiveness x necessary/unimportant	0.21	0.04	.042
	step 2 - other components	0.60	0.36	.001
sensible/foolish				
	step 1 - reduce energy loss x necessary/unimportant	0.24	0.06	.022
	step 2 - other components	0.55	0.30	.011
beneficial/harmful				
	step 1 - reduce energy loss x necessary/unimportant	0.23	0.05	.028
	step 2 - other componenets	0.48	0.23	.110

Table 13

Regression of Measured SN on Calculated SN

Measured SN	Calculated SN	R	R^2	Sig.
General - conserving energy in the home				
SN	step 1 - spouse thinks x motivation to comply	0.54	0.29	.000
	step 2 - friends think x motivation to comply	0.58	0.38	.000
	step 3 - government and family think x motivation to comply	0.59	0.35	.000
Intermediate - using insulative shades				
SN	step 1 - family thinks x motivation to comply	0.63	0.39	.000
	step 2 - government, spouse and friends think x motivation to comply	0.64	0.42	.000
Specific - using shade x				
SN	step 1 - family thinks x motivation to comply	0.37	0.13	.000
	step 2 - government, spouse and friends think x motivation to comply	0.40	0.16	.003

but is weakest at the specific level.

As measured SN was found to be significantly related to calculated SN at all three levels of behavior, Null Hypothesis 1(b) is rejected.

Null Hypothesis 2:

> There is no significant relationship between behavioral intention (BI) and (a) attitude toward the outcome of performing a behavior (Aact) and / or (b) subjective norm (SN).

Table 14 shows the results of multiple regression analyses performed to test hypothesis 2. As previously mentioned in Chapter 1, the order of entry into the regression equation of Aact and SN was controlled by the researcher. This was done in order to determine the interaction (if any) between Aact and SN. At the general level, there is no significant relationship between BI and *measured* Aact when Aact is entered into the equation before SN, but the regression of both Aact and SN together is significant. There is also a significant relationship between BI and SN plus Aact together when the measured value of SN is entered first. Aact accounted for only 5% of the variance in BI when entered into the equation first and contributed little when entered into the equation after SN. These findings suggest that there may be little interaction between the two independent variables of measured Aact and measured SN at the general level.

When the *calculated* Aact is entered into the equation ahead of SN, it is significantly related to BI and accounts for 19% of the variance in BI with SN contributing an additional 6%. When calculated SN is entered before Aact, it is significant and accounts for 15% of the variance in BI. In contrast to the measured components of Aact and SN, the findings show that there is considerable interaction between calculated Aact and calculated SN at the general level of behavior (i.e. conserving energy in the home). Lastly, the measured values of Aact and SN together provide a larger R^2 value than do the combined calculated values of Aact and SN.

In summary, it appears that with the general level of behavior, the SN component has the larger influence on BI when using the measured values. When considering the calculated components, it appears that Aact and SN are fairly equal in their affect on BI

Table 14

Regression of BI on Aact + SN or SN + Aact

Dependent Variable	Independent Variable (in order of entry into equation)	R	R^2	Sig
General Level-conserving energy in the home				
BI	Aact (good/bad)	.15	.02	.154
	(sensible/foolish)	.19	.04	.178
	(beneficial/harmful)	.21	.05	.221
	SN (measured)	.54	.29	.000
BI	SN (measured)	.51	.26	.000
	Aact (good/bad)	.52	.27	.000
	(sensible/foolish)	.53	.28	.000
	(beneficial/harmful)	.54	.29	.000
BI	Aact (calculated)	.44	.19	.000
	SN (calculated)	.50	.25	.000
BI	SN (calculated)	.39	.15	.000
	Aact (calculated)	.50	.25	.000
Intermediate Level-using insulative shades				
BI	Aact (good/bad)	.53	.28	.000
	(sensible/foolish)	.55	.30	.000
	(beneficial/harmful)	.55	.30	.000
	SN (measured)	.58	.34	.000
	SN (measured)	.38	.15	.000
	Aact (good/bad)	.57	.32	.000
	(sensible/foolish)	.58	.33	.000
	(beneficial/harmful)	.58	.34	.000
BI	Aact (calculated)	.51	.26	.000
	SN (calculated)[a]	.58	.33	.000
BI	SN (calculated)[a]	.42	.17	.000
	Aact (calculated)	.58	.33	.000

continued . . .

Table 14 (cont'd)

Regression of BI on Aact + SN or SN + Aact

Dependent Variable	Independent Variable (in order of entry into equation)	R	R^2	Sig
Specific Level-using Shade X				
BI	Aact (good/bad)	.63	.40	.000
	(sensible/foolish)	.63	.40	.000
	(beneficial/harmful)	.64	.41	.000
	SN (measured)	.68	.46	.000
BI	SN (measured)	.34	.12	.001
	Aact (good/bad)	.68	.46	.000
	(sensible/foolish)	.68	.46	.000
	(beneficial/harmful)	.68	.46	.000
BI	Aact (calculated)[b]	.30	.09	.001
	SN (calculated)[c]	.43	.19	.000
BI	SN (calculated)[c]	.37	.14	.000
	Aact (calculated)[b]	.43	.19	.000

[a] All motivation to comply figures obtained from general level results.

[b] All evaluation figures obtained from intermediate level results.

[c] All normative beliefs and motivation to comply figures obtained from intermediate and general level results respectively.

with Aact having a slightly larger influence, and there is a high level of interaction between the two components. At the intermediate level, both the *measured* Aact and *measured* SN are significantly related to BI regardless of the order of entry into the regression equation. This finding suggests that some interaction exists between the two components. The results also indicate that measured Aact has a stronger relationship with BI than the measured SN. Similarly, *calculated* Aact and *calculated* SN appear to be significantly related to BI regardless of the order of entry into the equation. Again, there seems to be a high degree of interaction between the two components of calculated Aact and SN, with Aact having the larger affect. Differing from the general level of behavior, measured Aact and SN together provided the same R^2 value as calculated Aact and SN.

At the specific level, results are similar to those described for the intermediate level, except the overall R^2 values are greater for the measured variables and less for the calculated ones. However, when looking at the calculated values only, the SN component provided a greater R^2 value than the Aact component. This was not the case at either the general or intermediate levels where calculated Aact provided a greater or equal influence on behavioral intention.

In summary measured Aact and SN provided R^2 values similar to calculated Aact and SN at the general and intermediate levels, but the R^2 value of the calculated components at the specific level was substantially smaller. For all three levels of behavior, the R^2 values of the measured components increased as the level of behavior became more specific. For the calculated components, the intermediate level of behavior provided the largest R^2 value.

As the independent variables were together significant in their relationship to BI, Null Hypothesis 2 is rejected at each level of behavior.

Null Hypothesis 3:

> There is no significant relationship between behavioral intention at the intermediate level (i.e. using insulative shades), and a) energy related beliefs at the general level or b) energy related attitudes at the general level.

Pearson product-moment correlations were used to determine the strength or relationships between six independent and one dependent variable (Table 15). The two

Table 15

Pearson Product-Moment Correlations between General Attitude and Beliefs, and Intermediate BI

Intermediate Variable	Independent Variable	R	Sig
BI	Aact (good/bad)	.12	.093
	(sensible/foolish)	.07	.226
	(beneficial/harmful)	.02	.411
	Aact (calculated)	.07	.236
BI	Belief-conserving energy will reduce national consumption	.10	.142
BI	Belief-conserving energy will lower monthly energy costs	.05	.285

general energy related beliefs were not significantly related to the intermediate level of behavioral intention. The results were similar for the three general measurements of Aact and the one calculated value of Aact. Of all the independent variables, the one which displayed the strongest relationship with the independent variable (BI), was the good/bad measurement of Aact, however, the strength of this relationship was still very weak.

Null hypothesis 3 was not rejected as the intermediate level dependent variable was not significantly related to any of six general level independent variables.

Null Hypothesis 4(a):

> Subjects' exposure to differing levels of energy conservation education and/or experience wih energy efficient shades will not be significantly associated with their awareness of insulative shades.

Chi-squared analyses were used to determine if there was a difference among those respondents who were educated about energy conservation and those who were not, and between those who had previously used insulative shades and those who had not, with respect to their awareness of insulative shades. Figure 3 shows the results of these analyses.

Both categorizations of energy educated/uneducated (Analyses 1 and 2) proved to be associated with awareness of insulative shades. A greater percentage of energy educated subjects claimed to have seen or heard of insulative shades. There was also a strong association between previous use of insulative shades and familiarity with these products. Thus, null hypothesis 4(a) is rejected.

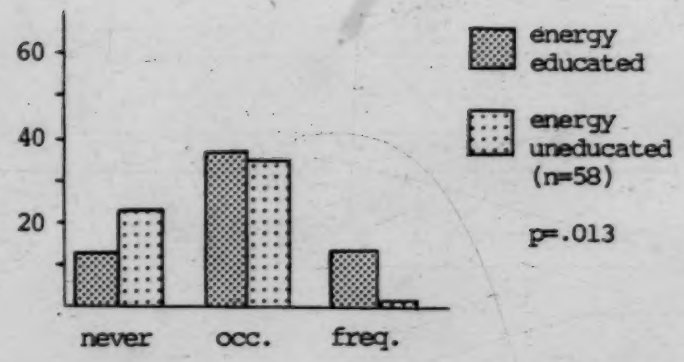
Null Hypothesis 4(b):

> Subjects exposed to differing levels of energy conservation education and/or experience with energy efficient shades will not differ significantly in their perceived need for insulative shades in their home.

T-tests were used to determine if significant differences existed in perceived need for insulative shades between the energy educated and uneducated groups, and between the group which had actually used insulative shades and the group who had not (Table 16). Two items were designed and used in the questionnaire to measure perceived need.

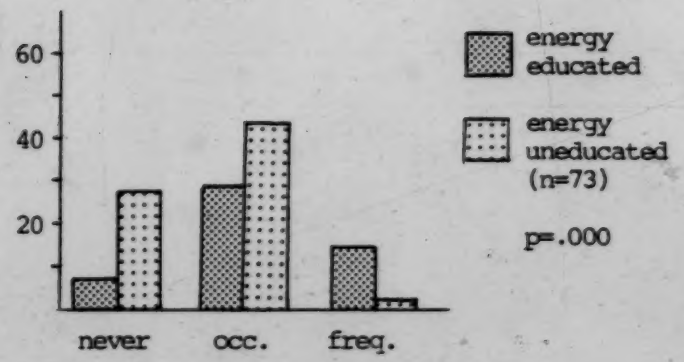
Figure 3

A. Energy educated/ uneducated determined by researcher (n=64) (Analysis 1)



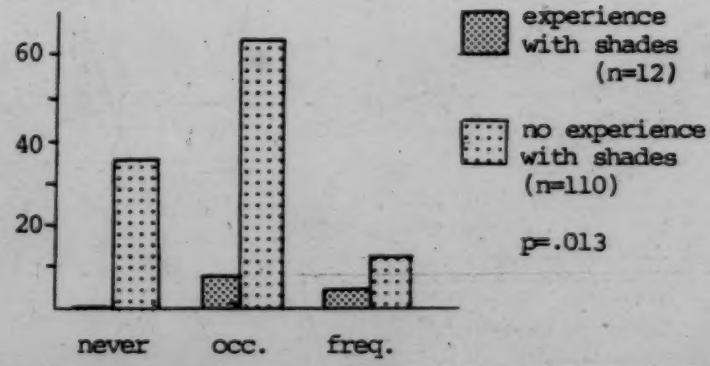
Have seen or heard of shades

B. Energy educated/ uneducated determined by respondents (Analysis 2)



Have seen or heard of shades

C. Experience or non-experience with insulative shades



Have seen or heard of shades

Figure 3. Association between Energy Conservation Education/Experience and Awareness of Insulative Shades

Table 16

T-tests to Determine Differences between Groups
On Perceived Need for Insulative Shades

	Mean (range=1to7)	Std. Dev.	Sig. of t
1. Window heat loss is not serious			
Energy educated (Analysis 1)	5.2	1.9	.382
Energy uneducated (Analysis 1)	4.9	1.9	
Energy educated (Analysis 2)	5.7	1.6	.004**
Energy uneducated (Analysis 2)	4.6	2.0	
Have used shades	5.4	1.6	.498
Have not used shades	5.0	2.0	
2. Should be concerned about window heat loss			
Energy educated (Analysis 1)	2.1	1.2	.614
Energy uneducated (Analysis 1)	2.2	1.3	
Energy educated (Analysis 2)	2.0	1.2	.201
Energy uneducated (Analysis 2)	2.3	1.3	
Have used shades	2.2	1.1	.994
Have not used shades	2.2	1.3	

**p<.01

When energy educated/uneducated groups were determined by the researcher (Analysis 1), there was no significant difference between the two groups regarding their perceived need for insulative shades in the home. However, when the energy educated/uneducated classification was determined by the respondents (Analysis 2), there was a significant difference between the two groups on one of the two items. The educated group was apt to disagree more strongly with the statement suggesting that window heat loss was not a serious problem.

The t-test also determined that no significant difference existed between those few respondents who had used insulative shades and those who had not, with respect to their perceived need for such products.

As most of the results indicated that no significant differences exist between groups, null hypothesis 4(b) is not rejected.

Null Hypothesis 4(c):

Subjects exposed to differing levels of energy conservation education and/or experience with energy efficient shades, will not differ significantly in their energy related beliefs such as:

(i) importance of repairing/constructing an energy efficient product
(ii) responsibility for the energy problem
(iii) personal consequences of an energy shortage
(iv) importance of individual efforts to conserve energy

Table 17 shows the results of t-tests used to test hypothesis 4(c)(i). There was no significant difference between respondents with or without energy education or those who had used or had not used insulative shades, regarding their belief about the ability to repair an energy efficient product. However, when considering the ability to construct a product to conserve energy, the energy educated group in both analyses (i.e. Analysis 1 and 2), differed significantly from the uneducated group with the former being more likely to invest in an energy efficient product that they could make themselves. There was no significant difference between the few subjects who had used insulative shades and those who had not concerning their belief about the ability to construct an energy efficient product.

Thus, null hypothesis 4(c)(i) is partially rejected for energy conservation education but is not rejected for experience with energy efficient shades.

Table 17

T-tests to Determine Differences between Groups
Regarding Beliefs about the Ability of
Repairing/Constructing An Energy Efficient Product

	Mean (range=1to7)	Std. Dev.	Sig. of t
1. Owner able to repair product			
Energy educated (Analysis 1)	2.98	1.93	.575
Energy uneducated (Analysis 1)	3.17	1.75	
Energy educated (Analysis 2)	2.82	1.96	.303
Energy uneducated (Analysis 2)	3.18	1.74	
Have used shades	3.58	1.98	.315
Have not used shades	3.02	1.83	
2. Owner able to construct product			
Energy educated (1)	2.58	1.59	.006**
Energy uneducated (1)	3.41	1.72	
Energy educated (2)	2.39	1.56	.002**
Energy uneducated (2)	3.38	1.71	
Have used shades	3.25	2.05	.557
Have not used shades	2.94	1.66	

**p<.01

For this study there were six factors identified as being potentially responsible for causing the energy problem. They were individual overconsumption of energy, lack of adequate government policy, control and price manipulations of oil companies, a real worldwide shortage of fuel, an artificial or imaginary shortage (a hoax), and finally, a set of complicated factors with no one group or factor being solely responsible. The results of hypothesis 4(c)(ii) shown in Table 18, suggest that the energy educated group (Analysis 1) differed from the uneducated group on one of these beliefs with the former group expressing stronger agreement with the belief that oil companies were responsible for the energy problem. In addition, respondents with no experience with insulative shades differed significantly from those who had used them with the former group agreeing more strongly with the belief that oil companies were the cause of the energy problem. There were no significant differences between groups on any of the remaining beliefs regarding responsibility for the energy problem.

Therefore, null hypothesis 4(c)(ii) is only partially rejected as significant differences were found between groups on only one belief.

As shown in Table 19, respondents differed over the belief that an energy shortage would affect them financially [hypothesis 4(c)(iii)]. In both analyses, the energy educated group agreed more strongly with this belief than the uneducated group. There was no significant difference in the belief that an energy shortage would affect personal lifestyle or would cause personal inconvenience.

As respondents differed on one of three beliefs, null hypothesis 4(c)(iii) is partially rejected.

None of the analyses in Table 20 show significant differences between the groups on any of the beliefs about the importance of individual efforts to conserve energy. Therefore, null hypothesis 4(c)(iv) is not rejected.

Null Hypothesis 4(d):

> Subjects exposed to differing levels of energy education and/or experience with energy efficient shades will not differ significantly in their attitude toward insulative shades or their beliefs and evaluations on selected attributes of insulative shades such as:

Table 18

T-tests to Determine Differences between Groups Regarding Beliefs about Responsibility for Energy Problem

	Mean (range=1to7)	Std. Dev.	Sig. of t
1. Individual Overconsumption			
Energy educated (Analysis 1)	3.25	1.70	.977
Energy uneducated (Analysis 1)	3.26	1.62	
Energy educated (Analysis 2)	2.98	1.55	.244
Energy uneducated (Analysis 2)	3.34	1.68	
Have used shades	3.00	1.71	.577
Have not used shades	3.28	1.65	
2. Real worldwide shortage of fuel			
Energy educated (1)	4.53	1.86	.512
Energy uneducated (1)	4.74	1.65	
Energy educated (2)	4.45	1.74	.154
Energy uneducated (2)	4.92	1.65	
Have used shades	4.00	1.59	.192
Have not used shades	4.70	1.77	
3. Crisis is a hoax			
Energy educated (1)	4.31	1.96	.127
Energy uneducated (1)	4.81	1.57	
Energy educated (2)	4.48	1.92	.900
Energy uneducated (2)	4.52	1.72	
Have used shades	5.33	1.30	.111
Have not used shades	4.46	1.83	
4. Many complicated factors involved			
Energy educated (1)	2.61	1.59	.643
Energy uneducated (1)	2.74	1.54	
Energy educated (2)	2.48	1.53	.315
Energy uneducated (2)	2.78	1.60	
Have used shades	3.00	1.59	.446
Have not used shades	2.64	1.56	

continued . . .

Table 18 (cont'd)

T-tests to Determine Differences between Groups Regarding Beliefs about Responsibility for Energy Problem

	Mean (range=1to7)	Std. Dev.	Sig. of t
5. Lack of government policy			
Energy educated (1)	3.53	1.56	.667
Energy uneducated (1)	3.66	1.61	
Energy educated (2)	3.64	1.48	.637
Energy uneducated (2)	3.49	1.64	
Have used shades	3.75	1.60	.713
Have not used shades	3.57	1.58	
6. Control by oil companies			
Energy educated (1)	3.06	1.59	.031*
Energy uneducated (1)	3.72	1.76	
Energy educated (2)	3.04	1.54	.106
Energy uneducated (2)	3.58	1.79	
Have used shades	4.33	1.50	.039*
Have not used shades	3.27	1.69	

**p<.01
*p<.05

Table 19

T-tests to Determine Differences between Groups Regarding Beliefs about the Personal Consequences of an Energy Shortage

	Mean (range=1to7)	Std. Dev.	Sig. of t
1. Shortage would cause personal inconvenience			
Energy educated (Analysis 1)	2.02	1.44	.189
Energy uneducated (Analysis 1)	2.38	1.60	
Energy educated (Analysis 2)	2.07	1.37	.484
Energy uneducated (Analysis 2)	2.27	1.63	
Have used shades	2.50	1.93	.458
Have not used shades	2.15	1.48	
2. Personal lifestyle affected			
Energy educated (2)	2.23	1.51	.680
Energy uneducated (2)	2.34	1.43	
Energy educated (2)	2.16	1.33	.541
Energy uneducated (2)	2.33	1.52	
Have used shades	2.75	1.48	.252
Have not used shades	2.24	1.46	
3. Financially affected			
Energy educated (1)	2.17	1.42	.011*
Energy uneducated (1)	2.86	1.55	
Energy educated (2)	2.16	1.48	.068
Energy uneducated (2)	2.68	1.51	
Have used shades	2.92	1.24	.318
Have not used shades	2.45	1.54	

*p<.05

Table 20

T-tests to Determine Differences between Groups Regarding the Belief about Importance of Individual Efforts to Conserve Energy

	Mean (range=1to7)	Std. Dev.	Sig. of t
1. Will not impact energy issue			
Energy educated (Analysis 1)	4.23	1.95	.866
Energy uneducated (Analysis 1)	4.29	1.86	
Energy educated (Analysis 2)	4.39	1.94	.523
Energy uneducated (Analysis 2)	4.15	1.92	
Have used shades	4.58	1.98	.540
Have not used shades	4.23	1.90	
2. Won't affect availability of energy			
Energy educated (1)	4.42	1.82	.172
Energy uneducated (1)	3.96	1.84	
Energy educated (2)	4.52	1.68	.083
Energy uneducated (2)	3.92	1.89	
Have used shades	4.00	1.95	.686
Have not used shades	4.23	1.84	
3. Will impact energy issue significantly			
Energy educated (1)	2.33	1.30	.356
Energy uneducated (1)	2.57	1.57	
Energy educated (2)	2.14	1.21	.065
Energy uneducated (2)	2.64	1.54	
Have used shades	3.00	1.81	.156
Have not used shades	2.38	1.38	

(i) aesthestics
(ii) cost
(iii) ease of operation, repair and construction
(iv) energy efficiency
(v) physical comfort value

As indicated in Table 21, none of the groups differed significantly in their measured or calculated attitudes toward using insulative shades. However, when looking at particular beliefs (Table 22), the energy educated respondents in Analysis 2 agreed more strongly with the belief that window shades would reduce home energy consumption than did the uneducated respondents. There were no significant differences between groups on any of the six remaining beliefs.

When evaluating whether or not it is necessary to use window shades which are comparable in cost to other window coverings, the energy educated respondents in both analyses agreed more strongly that such a cost comparison was necessary than the uneducated group (Table 23). On the other hand, respondents who had *not* used insulative shades tended to agree more strongly with necessity of cost comparison than those respondents who had used insulative shades. None of the groups differed significantly when evaluating beliefs about the importance of window coverings reducing heat loss.

As some groups significantly differed on some beliefs about using insulative shades or evaluations of these beliefs, null hypothesis 4(d) is partially rejected.

E. Other Variables of Interest

Although not related to the null hypotheses of this study, interesting differences were found within the sample of respondents. One such difference was between male and female respondents and their intentions to conserve energy in the home. On the general behavioral level, men reported significantly stronger intentions to conserve energy in the home than did women ($p=.042$). On the other hand, men recorded slightly negative intentions toward using insulative shades while the women's intentions were slightly

Table 21

T-tests to Determine Differences between Groups Regarding Attitude toward Insulative Shades

	Mean (range=3to-3)	Std. Dev.	Sig. of t
1. Measured Aact: good/bad			
Energy educated (Analysis 1)	1.62	1.53	.701
Energy uneducated (Analysis 1)	1.73	1.48	
Energy educated (Analysis 2)	1.50	1.60	.457
Energy uneducated (Analysis 2)	1.73	1.47	
Have used shades	1.55	1.24	.818
Have not used shades	1.68	1.53	
2. Measured Aact: sensible/foolish			
Energy educated (1)	1.61	1.40	.390
Energy uneducated (1)	1.86	1.50	
Energy educated (2)	1.51	1.52	.252
Energy uneducated (2)	1.85	1.42	
Have used shades	2.00	1.05	.532
Have not used shades	1.70	1.48	
3. Measured Aact: beneficial/harmful			
Energy educated (1)	1.82	1.21	.659
Energy uneducated (1)	1.93	1.31	
Energy educated (2)	1.83	1.26	.796
Energy uneducated (2)	1.90	1.28	
Have used shades	2.00	1.09	.725
Have not used shades	1.86	1.27	
4. Calculated Aact			
Energy educated (1)	24.70	39.89	.935
Energy uneducated (1)	22.54	40.29	
Energy educated (2)	28.98	41.07	.300
Energy uneducated (2)	20.86	39.90	
Have used shades	24.42	35.64	.947
Have not used shades	23.60	40.53	

Table 22

T-tests to Determine Differences between Groups Regarding Beliefs about Using Insulative Shades

	Mean (range=3to-3)	Std. Dev.	Sig. of t
1. Cost comparison belief			
Energy educated (1)	0.11	1.97	.540
Energy uneducated (1)	-0.11	1.91	
Energy educated (2)	0.17	1.99	.486
Energy uneducated (2)	-0.10	1.92	
Have used shades	0.50	1.62	.356
Have not used shades	-0.05	1.97	
2. Operation comparison belief			
Energy educated (1)	0.95	1.82	.794
Energy uneducated (1)	0.86	2.02	
Energy educated (2)	1.02	1.76	.559
Energy uneducated (2)	[illegible]	2.00	
Have used shades	1.25	1.71	.518
Have not used shades	0.87	1.93	
3. Repair comparison belief			
Energy educated (1)	0.19	1.68	.210
Energy uneducated (1)	0.62	1.98	
Energy educated (2)	0.17	1.65	.265
Energy uneducated (2)	0.57	1.96	
Have used shades	0.67	1.30	.603
Have not used shades	0.37	1.89	
4. Construction comparison belief			
Energy educated (1)	0.02	1.89	.456
Energy uneducated (1)	0.24	1.90	
Energy educated (2)	-0.07	1.94	.331
Energy uneducated (2)	0.29	1.88	
Have used shades	0.17	1.34	.909
Have not used shades	0.10	1.94	

continued . . .

Table 22 (cont'd)

T-tests to Determine Differences between Groups Regarding Beliefs about Using Insulative Shades

	Mean (range=3to-3)	Std. Dev.	Sig. of t
5. Attractiveness comparison belief			
Energy educated (1)	0.35	1.80	.121
Energy uneducated (1)	-0.18	1.90	
Energy educated (2)	0.50	1.91	.105
Energy uneducated (2)	-0.10	1.86	
Have used shades	-0.08	2.02	.719
Have not used shades	0.12	1.85	
6. Energy efficiency comparison			
Energy educated (1)	2.22	1.13	.327
Energy uneducated (1)	2.00	1.31	
Energy educated (2)	2.43	1.04	.033*
Energy uneducated (2)	1.93	1.30	
Have used shades	2.08	1.16	.923
Have not used shades	2.12	1.23	
7. Physical comfort comparison			
Energy educated (1)	1.65	1.68	.662
Energy uneducated (1)	1.52	1.67	
Energy educated (2)	1.86	1.70	.143
Energy uneducated (2)	1.38	1.67	
Have used shades	1.75	1.42	.722
Have not used shades	1.57	1.70	

*p<.05

Table 23

T-tests to Determine Differences between Groups
Regarding Selected Evaluations of Beliefs about Insulative Shades

	Mean (range=3to-3)	Std. Dev.	Sig. of t
1. Reduces heat loss x good			
Energy educated (1)	2.30	1.05	.849
Energy uneducated (1)	2.34	1.16	
Energy educated (2)	2.31	1.14	.976
Energy uneducated (2)	2.30	1.10	
Have used shades	2.54	0.82	.472
Have not used shades	2.29	1.12	
2. Reduces heat loss x necessary			
Energy educated (1)	2.07	1.37	.192
Energy uneducated (1)	1.70	1.52	
Energy educated (2)	2.07	1.46	.297
Energy uneducated (2)	1.76	1.45	
Have used shades	1.89	1.17	.976
Have not used shades	1.90	1.47	
3. Cost comparison x good			
Energy educated (1)	2.18	1.18	.639
Energy uneducated (1)	2.07	1.18	
Energy educated (2)	2.28	1.01	.368
Energy uneducated (2)	2.09	1.13	
Have used shades	1.75	1.06	.240
Have not used shades	2.17	1.19	
4. Cost comparison x necessary			
Energy educated (1)	1.86	1.29	.004**
Energy uneducated (1)	0.98	1.79	
Energy educated (2)	1.88	1.32	.024*
Energy uneducated (2)	1.15	1.69	
Have used shades	0.44	1.67	.043*
Have not used shades	1.56	1.56	

**p<.01
*p<.05

positive; (the difference between the two groups was not significant, however).

Results for the specific level of behavior were similar to those obtained at the general level with men expressing a significantly stronger intention (p=.022) to use the insulative shade they had selected.

It was interesting to note that there was very little difference between men and women when they were comparing the attractiveness of Shade X against the other shades on display. Both groups indicated that their selected shade was slightly more attractive than the others with women rating their choice slightly higher relative to the men. When comparing their selected shade on a long run cost basis, neither men nor women thought their shade would cost any less than the others on display. In fact, women generally indicated that the shade they had chosen would cost slightly more than the others.

Some comparisons were also made between urban and rural respondents with respect to their behavioral intentions. There were no significant differences in intention to conserve energy in the home and intention to use Shade X. This was also true of intentions toward using insulative shades; however, urban respondents were slightly negative in their intentions while rural residents were slightly positive.

Chi-square analyses were performed to determine if there were any demographic differences between the energy educated and uneducated groups. The groups coded by the researcher as being energy educated or uneducated (Analysis 1), were used for these analyses. A significant difference (p=.044) was found between the energy educated and uneducated groups regarding their employment status. The major difference was in the number of respondents working on a full-time basis as the energy educated group had twice as many people working full-time. In addition, the educated group had three times as many respondents classified as employed professionals. In spite of these findings, there was no significant difference between the two groups on their total household income. It should be noted, however, that approximately 25% of the sample did not supply information on total income. It was also interesting to note that 77% of the men were classified as being energy educated while only 48% of the women were classified as such.

Outside of the Fishbein-Ajzen theory, but of interest to the researcher was the respondents' selection of windows in the house to be insulated first and the reasons for

their choice. Many of the respondents indicated more than one room when making their selection. As indicated in Table 24, approximately 14% of the sample said they would like to insulate all of the windows in the house. The two most common reasons were because the house was old and it lost a considerable amount of heat, and because they would like to save energy and money. The two rooms chosen most often to be insulated were the living room (43%) and the bedrooms (41%). The two most common reasons to insulate the living room windows were due to the large size of the windows, and a desire to increase the room's physical comfort. Reasons for insulating the bedroom windows were to increase physical comfort and because the window(s) faced north. The kitchen, dining room and family room were selected next (18%, 16% and 14% respectivley), with the two most cited reasons being to increase physical comfort and the large window size. The bathroom was selected least often with no one reason being singled out over the others. Within the house the bedrooms were described most often as the only room in which the insulative shades would be aesthetically appropriate (6 responses). Less than five respondents in total suggested aesthetics as a reason for using insulative shades in the living, dining and family rooms.

Respondents were also asked if they were aware of another form of window insulation they preferred over the insulative shades on display. Ninety-two percent did not have another preference. Of the remaining 8%, the most common alternatives described were some form of rigid insulation, exterior insulation, and triple-glazed windows.

Table 24

Respondents Choice of Windows to be Insulated first

Windows	Frequency	Percent[a]	Most Common Reason	Second Most Common Reason
entire house	17	14	old house	save energy
living room	52	43	large window(s), greater heat loss	improve physical comfort
bedroom(s)	50	41	improve physical comfort	window(s) face north
kitchen	22	18	improve physical comfort	large window(s), greater heat loss
dining room	19	16	large window(s), greater heat loss	improve physcial comfort
family room	17	14	improve physical comfort	large window(s), greater heat loss
bathroom(s)	10	8	(no one reason emphasized)	

[a]Many respondents chose more than one window to be insulated first.

V. DISCUSSION

This chapter will examine the findings outlined in Chapter 4 in relation to the objectives of the study, the literature reviewed, and the conceptual framework of the study which is the Fishbein-Ajzen Model of Behavioral Intention as incorporated in the EKB model of Consumer Behavior.

The overall purpose of the study was two-fold: to determine the extent to which peoples' beliefs about energy conservation and flexible insulative window shades affect the formation of attitudes and intentions toward insulative shades, and in doing so, to determine the applicability of the Fishbein-Ajzen model of Behavioral Intentions as a conceptual framework for such research.

A. Awareness and Perceived Need for Insulative Shades

The first objective of this study was to determine consumer awareness of flexible insulative window systems and their perceived need for such products. To meet this objective, three questionnaire items were used. The results, shown in Table 14, indicate that nearly two-thirds of the sample were familiar with some type of insulative shades. In addition, most of the respondents agreed that windows are a serious source of heat loss and that they should be concerned about this problem. These findings suggest that most respondents are aware of insulative shades and generally feel there is a need for these products.

B. The Fishbein-Ajzen Model of Behavioral Intention

Objectives two to five of this study addressed the operation and applicability of the Fishbein-Ajzen model. To meet these objectives, several items were used to measure intentions for three different behaviors: intentions to conserve energy in the home (general level), intentions to use insulative shades the next time window coverings

are required (intermediate level), and intentions to use a selected shade (specific level).

Analyses of the Fishbein-Ajzen theory of reasoned action indicated that for the general behavior, the influence of others and their expectations (SN component), played a greater role in influencing behavioral intention (BI) than did the respondents' own attitude toward the consequences of performing the behavior (Aact component) when looking at the measured values only. A likely explanation for the dominance of the SN component at the general level relates to the way the sample responded to item which directly measured general Aact. Table 7 (Chapter 4) shows that most of the subjects varied little in their response to the three bi-polar scales measuring Aact (mean=2.7). As the response to general Aact did not vary significantly, it appears to have no relationship with BI. More meaningful results were obtained at the intermediate and specific levels where the responses to measured Aact had greater variation.

A possible explanation for the limited variation in responses to the measured Aact which addressed energy conservation in the home may derive from the "motherhood" nature of this topic. Messages promoting energy conservation often suggest that conserving energy is necessary to preserve the order and balance in nature and to ensure our children and grandchildren an adequate supply of energy in the future. Such "moral" and "unselfish" messages cause most people to support energy conservation in theory. As a result, there is a tendency to consistently agree with statements which suggest that energy conservation is a good idea. The motherhood nature of energy conservation could also provide an alternative explanation for the dominance of the measured SN component at the general level as respondents think it is socially desirable for them to conserve energy in the home.

In contrast to the general level of behavior, multiple regression analyses performed at the intermediate level show that intentions to use energy efficient window shades is influenced more by the subjects' attitude toward the consequences of performing the behavior than by the expectations of others. This finding suggests that while respondents *may* be influenced by others in the direction of their energy conserving behavior, they may be less willing to allow referents to influence the specific ways of carrying out the behavior. Another possible explanation for this finding may be that the respondents are less sure of the referents' expectations when it comes to more specific

types of behaviors. For example, a subject may know that his / her important referents are strongly in favor of using seat restraints while travelling in a car, however, the subject may be less sure if these same referents think he / she should choose a car with a lap seat belt, a shoulder and lap seat belt, or an inflatable air bag. Particularly in this study, where the product being investigated is not well known, respondents may have difficulty determining their referents' expectations regarding its use. Either of the forementioned explanations could cause neutral responses to items on a questionnaire (i.e. nearer to zero on a bi-polar scale) which ask about the specific expectations of important referents.

Government officials and spouse received the greatest values for both normative beliefs and motivation to comply in this study. When looking only at government officials and friends, the results of this study were consistent with those found in a study by Ellison, Ellison and Everett (1980). In both studies, the expectations of government officials regarding home energy conservation were viewed by the respondents as being stronger than their friends' expectations. Also in both studies, respondents expressed weak motivation to comply with government officials and friends, however, out of the two, government officials were perceived as having the greater influence.

According to the theory of reasoned action, both attitude toward the behavior (Aact) and the subjective norm (SN) are measured twice. First, both concepts are measured *directly* and second, each concept is broken down into its components for a calculated measurement. The components used for calculating Aact are beliefs and evaluations while the components used for calculating SN are normative beliefs and motivation to comply.

Multiple regression analyses showed that variation in calculated Aact at the general level accounted for a relatively small portion of the variance in measured Aact. The reason for this finding is likely identical to that described earlier for the weak relationship between measured Aact and BI at the general level. As mentioned previously, the small variation in response to measured Aact makes it difficult for a regression equation to determine the effect that a change in calculated Aact has on measured Aact. Stronger relationships were found between measured Aact and the calculated components of Aact at the intermediate and specific levels where the variances in measured Aact were greater.

Direct measurements of Aact and SN accounted for more variance in BI than the calculated measurment. This finding might suggest that attitude toward the outcome of performing a behavior may not merely be comprised of beliefs and evaluations of a behavior or that the subjective norm is not only the result of normative beliefs multiplied with motivation to comply as claimed by Fishbein and Ajzen. A more likely explanation may be that the items used in this study to measure beliefs, evaluations, normative beliefs and motivation to comply were inaccurate or incomplete. As a result, the measured Aact and calculated Aact were measuring something different when it was hoped they were measuring the same concept. Multiple regression analyses support the latter explanation as at the most, the variance in calculated Aact accounted for only 64% of the variance in measured Aact (Table 12). A multiple regression analysis involving the SN components had similar results as at the most only 42% of the variance in the measured SN was accounted for by changes in calculated SN (Table 13).

For the intermediate level of behavior, the Aact component (both measured and calculated), provided the larger influence on BI with some contribution from the SN component (Table 14). This was also true at the specific level but only with respect to the *measured* components of Aact and SN. These findings are consistent with other research discussed in Chapter 2, which found that the attitudinal component generally provided a greater influence on BI than did the normative compliance component. As suggested by Fishbein and Ajzen (1980), the two components are 'distinct but related' as the subjective norm likely affect BI throught attitude. In other words, if a person believes his family expects him to conserve energy in the home, this may not only affect his normative compliance, but may also result in the formation of a more positive attitude toward energy conservation in the home. In such cases, there should be considerable interaction between the SN and Aact components. Such were the findings in this study at the intermediate level, and to a lesser degree, at the specific level of behavior.

For this study, the measured value of attitude toward the outcome of performing a behavior (Aact) was measured on three scales using different descriptors. Regression analyses showed that after determining the effects of the first scale on BI, the two remaining scales did not account for more than 3% of the variance in BI. Therefore, it appears that the three scales were basically measuring the same concept.

The results of multiple regression analyses showed that as the nature of the behavior became more specific, the directly measured and calculated components of Aact and SN provided increasingly larger values for the variance in BI. The only exceptions were the calculated values found at the specific level which were lower than those at the intermediate level. One explanation for the larger R^2 value for the intermediate level may be that several beliefs and corresponding evaluations were used to calculate Aact, while only two beliefs and evaluations were used at the general level. In other words, the investigation of the components of Aact was more thorough at the intermediate level than it was at the general level. At the specific level, however, the calculated Aact and SN components decreased substantially in their ability to account for the variance in BI. A possible explanation for this decrease is likely related to the *borrowing* of results from the intermediate and general levels. As with the intermediate behavior, seven beliefs about product attributes were used in calculating Aact, however, there were no specific evaluations measured for these beliefs. Instead, the evaluation results obtained at the intermediate level were used because the product attributes presented were the same for both levels. Similar *borrowing* of results was used to obtain measurements for the normative beliefs and motivation to comply for the specific level. Such *borrowing* was done as it was thought by the researchers that evaluations regarding the beliefs about attributes for a specific shade would correlate highly with evaluations of beliefs about attributes for insulative shades in general. For example, if a respondent indicates that attractiveness is an important attribute when considering insulative shades in general, it was assumed that attractiveness would also be important when selecting a specific insulative shade. The same reasoning was used in *borrowing* intermediate and general results for the normative beliefs and motivation to comply respectively. However, the low R^2 values obtained at the specific level between BI and calculated Aact and SN suggest that borrowing results from other levels of behavior may not have been appropriate.

It was not unexpected that the association between the **intermediate** BI and the **general** beliefs and attitudes toward energy conservation in the home was very weak. Fishbein and Ajzen (1980) suggest that the effectiveness of their theory partially depends on BI and its components being of the same level of specificity (or generality). Thus, it was not surprising that there was little association between the respondents' intentions to

use insulative shades and their beliefs and attitudes toward energy conservation in the home.

C. Other Beliefs about Energy Conservation

In order to achieve objective six of this study, several beliefs regarding energy conservation were singled out and measured to determine their effect on consumer attitude and intention toward insulative shades. Four sets of beliefs outside of the Fishbein-Ajzen model were designed to contribute to the understanding of behavioral intentions. These items examined consumer beliefs about the groups of factors responsible for the energy problem, the importance of individual efforts to conserve energy, the personal consequences of an energy shortage, and the ability to repair or construct an energy efficient product. Uni-polar Likert type scales were used to measure the direction and strength of these beliefs. As discussed in Chapter 2, it is thought that individuals are more likely to adopt energy conserving behaviors if they believe that: individual overconsumption is a major cause of the energy shortage; an energy shortage would affect their personal lifestyle in some way; individual efforts to conserve energy would have a significant effect on the energy problem; or an energy efficient product can be repaired by the owner.

It was not unexpected that the statement which did not implicate a specific group or factor as responsible for the energy problem, received the strongest agreement. Considering the size and complexity of the energy industry, it seems apparent that there are many factors contributing to the success or failure of energy supply and distribution.

Nearly 29% of the sample indicated that the energy crisis is a hoax. These results are lower than those obtained in a study by McDougall and Ritchie (1980), in which 40% of the respondents did not believe an energy crisis really existed. These findings suggest a need exists to convince a large portion of the population about how and why an energy problem has developed. According to McDougall and Ritchie, it is difficult to encourage people to change their behavior if they do not believe there are sound reasons for doing so.

It was also interesting to note that many respondents perceived their own overconsumption of energy as being a greater contributor to the problem than inadequate government policies, oil company manipulations, or a real worldwide shortage of fuel. The findings of this study support the literature which claim that those consumers who view themselves as being largely responsible for the energy problem are more likely to adopt energy conserving behaviors if encouraged to do so.

The results of the present study also support the literature which states that subjects who strongly believe that individual efforts to conserve energy are important in alleviating the problem, will have stronger intentions to conserve energy. Three items were designed and used in the questionnaire to investigate the importance of individual efforts, and although all were significant in their association with BI, only one proved to be strongly associated with behavioral intention. One reason for this finding may be related to the wording of the three statements. The item which was strongly associated with BI was stated in a positive way (i.e. "Individual efforts to conserve energy **would** have a significant impact..."). In contrast, the other items were negative statements (i.e. "Conservation of energy by people like me **will not have** a significant impact...")(See Appendix B, Part A). There may be a tendency among respondents to agree more strongly with a positive statement than they disagree with a negative statement. Another explanation for the inconsistency in response may be that even though these items were attempting to measure the same belief, perhaps the subtle differences in wording resulted in the three statements measuring two to three beliefs instead of one belief as intended.

D. Affects of Education/Experience with Insulative Shades

It was not unexpected to find differences between respondents with some energy education and those with no education regarding their awareness of insulative shades. As these products are relatively new on the market, many people are still unaware of their existence. However, recent window insulation ideas are often presented at energy related workshops and seminars and therefore, subjects attending these meetings are generally aware of these products.

Perhaps of some surprise, was the finding that respondents with some energy education did not differ from uneducated respondents in their perceived need for insulative shades. It was expected that energy educated respondents would perceive a greater need to reduce the amount of heat lost through windows than would the uneducated group. However, both group's perception of the need for insulative shades was relatively high.

Overall, it was determined that respondents with some energy education agreed more strongly with statements that: oil company manipulations are causing the energy problem, an energy shortage would affect them financially, window shades would help reduce home energy consumption, they would rather invest in an energy efficient product they could make, and cost comparisons are necessary when choosing between insulative shades and other types of window coverings. Most of these findings were not unexpected as energy conservation workshops usually concentrate on different ways to conserve energy without spending large amounts of money on energy conserving products and ideas. As a result, energy educated consumers are generally interested in conserving energy in the home, but they realize that financial considerations are equally important.

The group with no experience in using insulative shades agreed more strongly with statements that oil company manipulations are mainly responsible for the energy problem and that cost comparisons were necessary when comparing insulative shades with other window coverings. As window insulation products are still relatively expensive, perhaps it makes sense that those respondents who have already used these products are less concerned with cost comparisons. It appears that their desire to conserve energy (or make their home more comfortable, etc.) is equally, if not more important than financial considerations. In summary, the findings of this study indicate that energy education and/or experience with insulative shades does influence energy related beliefs and attitudes, however, this influence is very limited.

VI. SUMMARY, CONCLUSIONS & RECOMMENDATIONS

A. Summary

The purpose of this study was two-fold: to determine the extent to which peoples' beliefs about energy conservation and flexible insulative window systems affect the formation of attitudes and intentions toward insulative window shades, and in doing so, to determine the applicability of the Fishbein-Ajzen model of behavioral intentions as a conceptual framework for such research.

A questionnaire consisting of 78 items was developed following the procedures outlined by Fishbein and Ajzen (1980). Items which measured the components of the model utilized bi-polar scales while the remaining items measuring four sets of beliefs outside of the model used uni-polar scales. The questionnaire also included 10 items on demographic and socio-economic information. The questionnaires were self-administered to 122 respondents while in group settings. Prior to completing the questionnaire, each group was presented with five different types of insulative shades accompanied by a technical description of product attributes.

Respondents were classified as being educated in terms of energy conservation or uneducated depending on their past experience and the type of meeting they were attending at the time (i.e. either energy conservation related or unrelated). The sample was almost equally divided as 52% had received some education related to energy conservation while 48% had received no energy education.

Data analyses were conducted using the SPSSx package and included nominal and interval level data. Descriptive analyses such as frequencies, means and standard deviations were used to describe the sample as well as components of the Fishbein-Ajzen model. Multiple regression analyses, Pearson product moment correlations, chi-square analyses and t-tests were used to test the null hypotheses.

Most of the respondents (75%) considered windows to be a serious source of heat loss. This finding was interpreted as a suggestion by the respondents that a need exists for some type of window insulation. Pearson product moment correlation

analysis indicated that a fairly strong and significant association exists between one item designed to measure perceived need and intention for all three levels of behavior. Most of the respondents (80%) reported positive but weak intentions to conserve energy in the home, and slightly less than half (47%) stated positive intentions to use some type of insulative shade the next time they required window coverings but again these intentions were quite weak. A similar percentage of respondents (52%) had positive but weak intentions to use a selected insulative shade or something very similar the next time they required window coverings.

Within the model of behavioral intention are the two weighted components of Aact and SN. According to Fishbein and Ajzen (1980), these two components are both measured twice: firstly, they are measured *directly* and secondly, both are separated into two further components which are first measured and then multiplied together. The two used to calculate Aact are beliefs about the consequences of performing a behavior and the evaluations of the consequence. The two components used to calculate SN are normative beliefs and motivation to comply with important referents. The belief and evaluation components concerning the use of insulative shades (intermediate level) provided the strongest relationship with measured Aact (R^2=.64). Similar results were found for the SN component as the intermediate calculations of normative beliefs and motivation to comply produced the strongest relationship with measured SN (R^2=.42). However, the results suggest that either the two main components of Aact and SN are not only comprised of the variables described by Fishbein and Ajzen or, more likley, the beliefs and evaluations used to calculate Aact and the normative beliefs and motivation to comply used to calculate SN were inaccurate or incomplete in this study.

The relative influences of Aact and SN on BI were examined at all three levels of behavior. At the general level of behavior, the measured SN component provided the greatest influence on BI with little contribution from measured Aact. This finding may be the result of the "motherhood" nature of energy conservation which encourages many people to support the cause in theory largely because it is considered to be socially right and desirable. Therefore, it may not be surprising that the SN component, which reflects the expectations of others, should be the dominant factor. Another explanation for the high influence of SN on BI is related to the consistent response received by

measured Aact. The sample's response to measured Aact was nearly the same throughout with little variation. As a result, the regression analysis showed that there was little or no relationship between measured Aact and BI at the general level. The results of the calculated components of Aact and SN support the latter explanation over the former as calculated Aact and SN were nearly equal in their affect on BI with Aact having a slightly greater effect.

For the intermediate level of behavior, the Aact component (both measured and calculated), provided the larger influence on BI with some contribution from the SN component. However, at the specific level, the calculated component on SN provided greater influence on BI than did the calculated component of Aact.

A Pearson product moment correlation was done to determine the association between general beliefs and attitudes toward energy conservation in the home and intention to use insulative shades. The results provided from this analysis were consistent with one of the major propositions of the Fishbein and Ajzen model. This proposition states that the type of behavior under investigation must correspond in its level of generality (or specificity) with the other components of the model. Therefore, it was not unexpected to find that no significant associations were found between *general* beliefs and attitudes and *intermediate* behavioral intention.

Four sets of beliefs outside of the model were designed to contribute to the understanding of BI. One set of beliefs attempted to place blame or responsibility for the energy problem. The belief which received the strongest agreement did not implicate one particular group or factor but suggested that the energy problem was the result of several complicated factors. Respondents who believed consumer overconsumption was largely to blame for the energy shortage or who believed that individual efforts to conserve energy were important had stronger intentions to conserve energy and to use insulative shades.

Respondents with some energy education differed significantly from those with no energy education on the beliefs about: the ability to construct an energy efficient product; oil companies being mainly responsible for the energy problem; the financial effects of an energy shortage; the effectiveness of window shades to reduce home energy consumption; and the necessity to compare cost between insulative shades and other

window coverings. The small number of respondents who had used insulative shades differed significantly from those who had not used them on beliefs about the repsonsibility of oil companies for the energy problem and the necessity to compare cost between insulative shades and other window coverings.

Compared to women respondents, men reported significantly stronger intentions to conserve energy in the home and to use their selected insulative shade. Urban residents were slightly negative in their intentions to use insulative shades while rural residents had slightly positive intentions; however, the difference between the two groups was not significant. Significant differences were found between the energy educated group and the uneducated group on some demographic variables.

B. Conclusions

The first objective was to determine consumer awareness of flexible insulative window systems along with the perceived need for these products. The results indicated that most consumers (nearly 75%) are aware of these products and do feel there is a need to use window insulation in their home.

The second objective was to determine the extent to which consumer beliefs and evaluations about a variety of flexible insulative window systems shape their attitude toward such products. Overall, it appears that beliefs and evaluations were quite effective in calculating attitude toward the use of insulative shades.

The third objective in this study was similar to the second objective except that the variables examined were the subjective norm and its components of normative beliefs and motivation to comply. In this study, the components of SN seem to provide an adequate measurement of the subjective norm at the general and intermediate levels of behavior.

The fourth objective was to determine the degree to which attitudes and normative compliance determine BI. The results of this study consistently indicate that when the

determinants of BI (Aact and SN) are *directly* measured, the relationship with BI is stronger.

Overall, it appears that attitude toward the outcome of performing a behavior (Aact) and normative compliance (SN) have considerable influence on behavioral intention (BI).

Objective five attempted to determine the applicability of the Fishbein-Ajzen model of behavioral intention in studying the relationships described in objectives two to four. The findings suggest that the model is appropriate for examining the relationship between attitude and its components (beliefs and evaluations) and subjective norm and its components (normative beliefs and motivation to comply). To obtain the best results when examining the relationship between measured and calculated components of the model, several factors need to be considered. Firstly, when calculating Aact it is important to thoroughly determine those beliefs which are salient regarding the action or behavior under investigation. Likewise, it is important to determine the important referents for each behavior when calculating SN. Secondly, when calculating Aact and SN, borrowing results from other levels of behavior for components which are thought to be highly correlated does not appear to be appropriate when using the Fishbein-Ajzen model. In this study, the strongest relationship found between measured and calculated Aact was at the intermediate level of behavior where the number of salient beliefs was greater and very little borrowing of results from other levels occurred. Similar findings were recorded at the intermediate level for SN. Finally, more meaningful results are realized when items are designed to provide a greater variation of response to the components if multiple regression analyses are required.

When looking at the relationship between BI and Aact with SN, it appears that the direct measurements of Aact and SN provided slightly stronger relationships than did the calculated measurements. However, if all of the factors above were considered, the relationship between calculated SN and BI may be substantially improved.

It could also be concluded from this study that measured Aact requires only one scale with one set of descriptors as the addition of two other scales with different descriptors contributed very little in explaining the variance in BI.

Objective six, to determine the extent to which general energy related beliefs and attitudes affect behavioral intention toward insulative shades, was accomplished. The lack of significant associations between the general and intermediate components of the model support one of the propositions within the theory of reasoned action.

Objective seven attempted to measure a set of four energy related beliefs which were not included in the Fishbein-Ajzen model but were mentioned in the literature as having an affect on the adoption of energy conserving behaviors. Although several of the beliefs were significant in their relationship to BI, only three relationships were relatively strong. The results of Pearson product moment correlations suggest that some of these beliefs should be included as part of the model of behavioral intention when examining energy conserving behaviors and intentions in the home.

Objective eight was to determine the possible effects that energy conservation education might have on some of the variables mentioned above. Results of t-test analyses led to the conclusion that energy conservation education and experience with insulative shades have only a limited affect on beliefs, evaluations and attitudes toward the use of insulative shades as the groups differed significantly on only a few evaluations and beliefs.

C. Limitations

This study was limited in that overt behaviors were not observed, therefore, it was impossible to determine the effectiveness of the Fishbein-Ajzen model in predicting actual behavior.

Another limitation was the non-random selection of the sample. As the questionnaire was designed to be administered in a group setting and as certain groups were important to the study (i.e. energy conservation groups), it was difficult to obtain a random sample.

A further limitation involved the mock-ups of the insulative window shades which were displayed and described to all groups. Responses to certain questionnaire items may have been influenced as these shades were not displayed in the most realistic and appealing manner.

A final limitation was the lack of familiarity and experience with the product used in this study. Although respondents were supplied with technical information and the opportunity to handle and operate the window shades, certain questionnaire items may have been difficult to answer, particularly those addressing normative beliefs.

D. Recommendations

Energy Policy Makers

Consumers seem to be confused, skeptical and lacking in knowledge about the energy situation. In order to bring about change in energy conserving behavior, consumers must be presented with more information about the major problems and complications associated with energy production. Such information should be presented by a reliable and credible source. According to the results of this study, such information would not be best received from oil companies.

In this study, consumers generally agreed that an energy shortage would affect them personally and financially. As consumers seem to have accepted these consequences of an energy shortage, presenting more detailed information on the nature of these consequences may prove effective in changing consumer attitudes about energy conservation.

Not only do some consumers need to be convinced that an energy problem does exist, but they also need to learn to view themselves as an important part of the solution. In the present study, nearly 20% of the responses to the item stating that home energy conservation would help reduce national energy consumption were either neutral or negative. Consumers may need more information on the amount of energy used for

domestic purposes along with the potential national savings which could be realized from home energy conservation practices.

Manufacturers of Insulative Shades

The results of this study suggest that for every consumer with positive intentions to use insulative shades, there is another consumer with neutral or negative intentions. Consumers rated insulative shades favorably on energy efficiency and physical comfort but were less favorable in their ratings on cost and attractiveness. The researcher recognizes that reducing costs may be difficult and that the appearance of insulative shades is largely determined by the methods of sealing and operation. However, consumers should be made aware of the payback period of insulative shades which should be calculated on the difference in cost between using alternative window coverings and using insulative shades. Currently, the payback period for insulative shades is often based on a cost comparison between a window with no window covering and one with insulative shades.

Those interested in promoting the use of insulative shades might also try emphasizing some of their other benefits of insulative shades such as increased room comfort, privacy and light control and noise reduction. Also, more effort should be made to inform the consumer about the existence and availability of insulative shades. Within this study's sample, 25% of the respondents had never seen or heard of these products and many who had seen or heard of them knew very little about the product.

Finally, the results obtained in this study indicate that along with attractiveness and cost comparison, consumers often regard the ability to easily operate and repair these products as being important. Perhaps more emphasis should be placed on marketing these product attributes.

E. Future Research

The inability to observe actual behavior is a major weakness in studies which examine the effectiveness of the Fishbein-Ajzen model of behavioral intention. Future studies should select energy conserving behaviors which are more immediate and easily observable in order to provide more thorough analyses of the model.

When using the Fishbein-Ajzen model to determine behavioral intention, it seems to be important to choose questionnaire items which provide a substantial variation in response. However, with *motherhood* topics such as energy conservation, avoiding consistent responses may be difficult.

It would be interesting to replicate this study using some of the beliefs which were outside of the model and displayed relatively strong associations with behavioral intention, to see their affect on behavioral intention when included within the regression model.

The effect that experience with performing a particular behavior has on the effectiveness of the model of behavioral intention could be examined by comparing the results of separate multiple regression equations between an experienced group and an unexperienced group. Unfortunately, the group with experience using insulative shades in this study was relatively small.

Random selection of the sample would provide more meaningful results. Future research related to the present study could easily become more random if less emphasis was placed on including respondents with energy conservation education or experience with insulative shades. A larger sample could also be obtained if a mailed questionnaire was developed and used. In order to obtain accurate responses, realistic representations of the insulative shades along with the appropriate fabric samples would be necessary.

Finally, it would be interesting to conduct a study similar to this study with the information and questionnaires supplied by different sources (e.g. government vs. oil companies vs. product manufacturers, etc.), to determine if the source of information affects the formation of beliefs, attitude and behavioral intention.

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APPENDICES

APPENDIX A

Respondents' Consent Form

FACULTY OF HOME ECONOMICS
THE UNIVERSITY OF ALBERTA • EDMONTON, CANADA • T6G 2M8
403 • 432·3824

We are requesting your assistance in a research project on window insulation systems. The accompanying questionnaire is designed to determine your views on these systems and energy conservation in general.

Your participation in this study is very important and would be most appreciated. It will not take long - about 20-25 minutes. Your participation is voluntary.

The information you provide will not be associated with your name in any way, so you are assured of complete confidentiality. The information collected will be used to analyse the community's views on this subject. The information will be kept at the University and eventually might also be used by others who are interested.

If you agree to participate, please sign the consent form below.

- - - - - - - - - - - - - - - - - - - -

After having the questionnaire's purpose and process explained to my satisfaction, I agree to participate in the activity. I realize that I may stop and that I do not have to complete the questionnaire.

Date _____ Signature _____

- - - - - - - - - - - - - - - - - - -

If you are willing to participate in future follow-up research related to the present study, please provide the following information.

Name _____

Address _____

Telephone (Res.) _____ (Bus.) _____

r140

APPENDIX B

Questionnaire

GENERAL INSTRUCTIONS

Most of the questions which follow make use of rating scales with seven spaces; you are to make a check mark (✓) in the space that best describes your opinion. For example, if you were asked to rate "The postal service in Edmonton" on such a scale, the seven spaces should be interpreted as follows:

The postal service in Edmonton is

good	:	:	:	:	:	:	: bad
	extremely	quite	slightly	neither	slightly	quite	extremely

If you think the postal service is quite good, then you would place your mark as follows:

The postal service in Edmonton is

good	:	✓	:	:	:	:	: bad
	extremely	quite	slightly	neither	slightly	quite	extremely

For questions containing more than one scale, please mark each scale. For example,

The postal service in Edmonton is

good	:	✓	:	:	:	:	: bad
fast	:	:	✓	:	:	:	: slow

In making your ratings please remember the following points:

(1) Place marks in the middle of the spaces, not on the boundaries:

:	✓	:	:	:	✓	:
	this			not this		

(2) Be sure to answer all items - please do not omit any.

(3) Never put more than one check mark on a single space.

r140

PART A

1. Before today, I have seen or heard of window shades designed to conserve energy in the home:

   never ___
   occasionally ___
   frequently ___

2. I attend lectures/seminars/workshops on energy conservation:

   never ___
   occasionally ___
   frequently ___

3. I have used insulative window shades previously in my home:

   yes ___
   no ___

4. Overconsumption by individuals has contributed to this country's energy problem:

   strongly agree ___:___:___:___:___:___:___ strongly disagree

5. The energy crisis is largely due to real worldwide shortages of fuels needed to produce energy:

   strongly agree ___:___:___:___:___:___:___ strongly disagree

6. The energy crisis is a hoax:

   strongly agree ___:___:___:___:___:___:___ strongly disagree

7. The energy crisis is the result of many complicated factors and no one group is responsible:

   strongly agree ___:___:___:___:___:___:___ strongly disagree

8. The energy crisis is largely due to the federal government's lack of an adequate energy policy:

   strongly agree ___:___:___:___:___:___:___ strongly disagree

9. The energy crisis is largely due to supply and price manipulations by the major oil companies:

strongly agree ___:___:___:___:___:___:___ strongly disagree

10. Conservation of energy by people like me will not have a significant effect on the energy issue:

strongly agree ___:___:___:___:___:___:___ strongly disagree

11. An energy shortage would cause inconvenience to me personally:

strongly agree ___:___:___:___:___:___:___ strongly disagree

12. An energy shortage would affect my personal lifestyle:

strongly agree ___:___:___:___:___:___:___ strongly disagree

13. My energy conservation efforts won't have much effect one way or the other on the availability of energy for other people:

strongly agree ___:___:___:___:___:___:___ strongly disagree

14. Individual efforts to conserve energy would have a significant impact upon the nation's overall energy consumption:

strongly agree ___:___:___:___:___:___:___ strongly disagree

15. An energy shortage would affect me financially:

strongly agree ___:___:___:___:___:___:___ strongly disagree

16. I don't consider windows to be a serious source of heat loss in my home:

strongly agree ___:___:___:___:___:___:___ strongly disagree

17. I would be more willing to invest in an energy efficient product if someone in the house could repair it:

strongly agree	___:___:___:___:___:___:___	strongly disagree

18. I should be concerned about the amount of heat lost through windows in my home:

strongly agree	___:___:___:___:___:___:___	strongly disagree

19. I would be more willing to invest in an energy efficient product if someone in the house could make it:

strongly agree	___:___:___:___:___:___:___	strongly disagree

PART B

20. From now on I will try to conserve energy in the home:

likely	___:___:___:___:___:___:___	unlikely	r=.41 p=.080*

21. Conserving energy in the home is:

foolish	___:___:___:___:___:___:___	sensible	r=.77 p=.001
a good idea	___:___:___:___:___:___:___	a bad idea	r=.62 p=.012
harmful	___:___:___:___:___:___:___	beneficial	r=.09 p=.373

22. Reducing national energy consumption is:

good	___:___:___:___:___:___:___	bad	r=.31 p=.149
necessary	___:___:___:___:___:___:___	unimportant	r=.58 p=.019

23. Saving money by lowering monthly energy costs is:

necessary	___:___:___:___:___:___:___	unimportant	r=.83 p=.000
good	___:___:___:___:___:___:___	bad	r=.72 p=.003

24. Conserving energy in the home would help to reduce national energy consumption:

likely	___:___:___:___:___:___:___	unlikely	r=.45 p=.060

---

* Results of reliability (pre-post) test

25. Conserving energy in the home would save me money by lowering my monthly energy costs:

likely ___:___:___:___:___:___:___ unlikely r=.18 p=.275

26. Most people who are important to me think I

should ___:___:___:___:___:___:___ should not r=.19 p=.210

make an effort to conserve energy in the home.

27. My spouse thinks I should conserve energy in the home: N/A _____

likely ___:___:___:___:___:___:___ unlikely

28. My family thinks I should conserve energy in the home:

likely ___:___:___:___:___:___:___ unlikely r=.56 p=.024

29. My friends think I should conserve energy in the home:

likely ___:___:___:___:___:___:___ unlikely r=.34 p=.130

30. Government officials think I should conserve energy in the home:

likely ___:___:___:___:___:___:___ unlikely r=.32 p=.141

31. With respect to conserving energy in the home, I want to do what my spouse thinks I should do: N/A _____

likely ___:___:___:___:___:___:___ unlikely

32. With respect to conserving energy in the home, I want to do what my family thinks I should do:

likely ___:___:___:___:___:___:___ unlikely r=.15 p=.318

33. With respect to conserving energy in the home, I want to do what my friends think I should do:

likely ___:___:___:___:___:___:___ unlikely r=.29 p=.169

34. With respect to conserving energy in the home, I want to do what government officials think I should do:

likely ___:___:___:___:___:___:___ unlikely r=.28 p=.173

35. The next time I require window coverings in my home, I will use insulative window shades:

likely	___:___:___:___:___:___:___	unlikely	r=.56 p=.023

36. Using insulative window shades in my home is:

a good idea	___:___:___:___:___:___:___	a bad idea	r=.75 p=.001
beneficial	___:___:___:___:___:___:___	harmful	r=.72 p=.002
sensible	___:___:___:___:___:___:___	foolish	r=.66 p=.006

37. Using window shades which are comparable in cost to other window coverings is:

good	___:___:___:___:___:___:___	bad	r=.94 p=.000
necessary	___:___:___:___:___:___:___	unimportant	r=.46 p=.055

38. Using window shades which are easy to operate is:

necessary	___:___:___:___:___:___:___	unimportant	r=.32 p=.145
good	___:___:___:___:___:___:___	bad	r=.43 p=.073

39. Using window shades which are easy to repair is:

necessary	___:___:___:___:___:___:___	unimportant	r=.10 p=.371
good	___:___:___:___:___:___:___	bad	r=.18 p=.280

40. Using window shades which are easy to construct is:

necessary	___:___:___:___:___:___:___	unimportant	r=.54 p=.028
good	___:___:___:___:___:___:___	bad	r=.73 p=.002

41. Using window shades which add attractiveness to the home is:

good	___:___:___:___:___:___:___	bad	r=1.00 p=.000
necessary	___:___:___:___:___:___:___	unimportant	r=.82 p=.000

42. Using window shades which reduce energy consumption is:

good	___:___:___:___:___:___:___	bad	r=.74 p=.002
necessary	___:___:___:___:___:___:___	unimportant	r=.50 p=.040

43. Using window shades which add physical comfort to the rooms in my home is:

necessary ___:___:___:___:___:___:___ unimportant r=.22 p=.233
good ___:___:___:___:___:___:___ bad r=.17 p=.284

44. My using insulative window shades would cost the same amount in the long run as other window coverings:

likely ___:___:___:___:___:___:___ unlikely r=.47 p=.051

45. My using insulative window shades would be as easy for me to operate as other window coverings:

likely ___:___:___:___:___:___:___ unlikely r=.77 p=.001

46. My using insulative window shades would provide a window covering which is as easy to repair as other window coverings:

likely ___:___:___:___:___:___:___ unlikely r=.35 p=.119

47. My using insulative window shades would provide a window covering which is as easy to construct as other window coverings:

likely ___:___:___:___:___:___:___ unlikely r=.10 p=.375

48. My using insulative window shades would add to the overall attractiveness of my home:

likely ___:___:___:___:___:___:___ unlikely r=.59 p=.017

49. My using insulative window shades would reduce energy consumption in my home:

likely ___:___:___:___:___:___:___ unlikely r=.55 p=.026

50. My using insulative window shades would increase the physical comfort of the rooms in my home:

likely ___:___:___:___:___:___:___ unlikely r=.74 p=.002

51. Most people who are important to me would think I

should ___:___:___:___:___:___:___ should not r=.32 p=.145

use insulative window shades.

52. My spouse thinks I should use insulative window shades: N/A _____

likely ___:___:___:___:___:___:___ unlikely

53. My family thinks I should use insulative window shades:

likely ___:___:___:___:___:___:___ unlikely r=-.13 p=.342

54. My friends think I should use insulative window shades:

likely ___:___:___:___:___:___:___ unlikely r=.78 p=.001

55. Government officials think I should use insulative window shades:

likely ___:___:___:___:___:___:___ unlikely r=.44 p=.065

56. After viewing all of the insulative window shades on display, please select the shade you think is the best.

Shade A _____ Shade D _____

Shade B _____ Shade E _____

Shade C _____

In the following questions, Shade X will refer to the shade you have selected, therefore, please answer the questions considering only that particular shade.

57. The next time I require window coverings, I will select Shade X or something very similar.

likely ___:___:___:___:___:___:___ unlikely r=.36 p=.111

58. Using Shade X in my home would be:

a good idea ___:___:___:___:___:___:___ a bad idea r=.76 p=.001

sensible ___:___:___:___:___:___:___ foolish r=.90 p=.000

beneficial ___:___:___:___:___:___:___ harmful r=.76 p=.001

59. Using Shade X would add more to the attractiveness of my home than would the other shades on display:

likely ___:___:___:___:___:___:___ unlikely r=.44 p=.068

60. Using Shade X would allow easier operation (raising and lowering) than would the other shades on display:

likely ___:___:___:___:___:___:___ unlikely r=.72 p=.003

61. If used properly, Shade X would reduce energy loss better than the other shades on display:

likely ___:___:___:___:___:___:___ unlikely r=.74 p=.002

62. Using Shade X would cost me less in the long run than the other shades on display:

likely ___:___:___:___:___:___:___ unlikely r=.33 p=.133

63. My using Shade X would provide a window covering which is easier to repair than would the other shades on display:

likely ___:___:___:___:___:___:___ unlikely r=.48 p=.047

64. My using Shade X would provide a window covering which is easier to construct than would the other shades on display:

likely ___:___:___:___:___:___:___ unlikely r=.63 p=.011

65. Using Shade X would add more physical comfort to the rooms in my home than would the other shades on display:

likely ___:___:___:___:___:___:___ unlikely r=.47 p=.052

66. Most people who are important to me would think I

should ___:___:___:___:___:___:___ should not r=-.22 p=.236

use Shade X.

PART C

67. If there is another form of window insulation that you prefer above those presently on display, please provide a brief description of the product(s).

_____

_____

_____

68. Please check the window(s) in your home that you would be most likely to insulate first and give the reason(s) why.

entire house ___ _____

_____

living room ___ _____

_____

dining room ___ _____

_____

family room ___ _____

_____

kitchen ___ _____

_____

badroom(s) ___ _____

_____

bathroom(s) ___ _____

_____

other ___ _____

_____

In order for the results of this questionnaire to be most helpful, it is important to determine how representative our sample is of the total population. We try to ensure that all education levels, occupations, etc., are represented in our survey in the same proportion as they exist in the total population. The results of the following questions help to determine how closely we have achieved this objective. All responses are confidential.

69. Highest level of education you have completed (please check one):

Elementary	
Incomplete	____
Complete	____
Junior High	
Incomplete	____
Complete	____
High School	
Incomplete	____
Complete	____
Non-University (Voc/Tech, Nursing Schools)	
Incomplete	____
Complete	____
University	
Incomplete	____
Diploma/Certificate (Hygienists)	____
Bachelor's Degree	____
Medical Degree (Vets, Drs. Dentists)	____
L.L.B. degree	____
Master's Degree	____
Doctorate	____

70. In total, how many years of schooling do you have? This includes total of grade school, high school, vocational, technical, and university. ____ years

71. Your Age ____ years

72. Your present employment status (check one):

Employed full-time	.....	___
Employed part-time	.....	___
Unemployed	.....	___
Retired	.....	___
In School	.....	___
Keeping house	.....	___
Other (Specify)	_____	___

73. Your current OCCUPATION: please describe what you do and the kind of firm or agency for which you do it (e.g., clerk in a grocery store; elementary school teacher; professional engineer in own consulting firm).

_____

74. What is the TOTAL income of all the members of this household for this past year before tax deductions? Please check the most appropriate category.

Under $10,000	___		
$10,000 - 15,999	___	$34,000 - 39,999	___
$16,000 - 21,999	___	$40,000 - 49,999	___
$22,000 - 27,999	___	$50,000 - 59,999	___
$28,000 - 33,999	___	$60,000 - 69,999	___
		$70,000 +	___

75. Sex: ___ Male ___ Female

76. Marital Status:

___ Single (including separated, divorced, widowed)
___ Married

77. Do you: own your house ___
own your condominium ___
rent your house or apartment ___

78. Where do you live: City of Edmonton ___
Other Village, Town or City (please specify) _____
Farm acreage ___

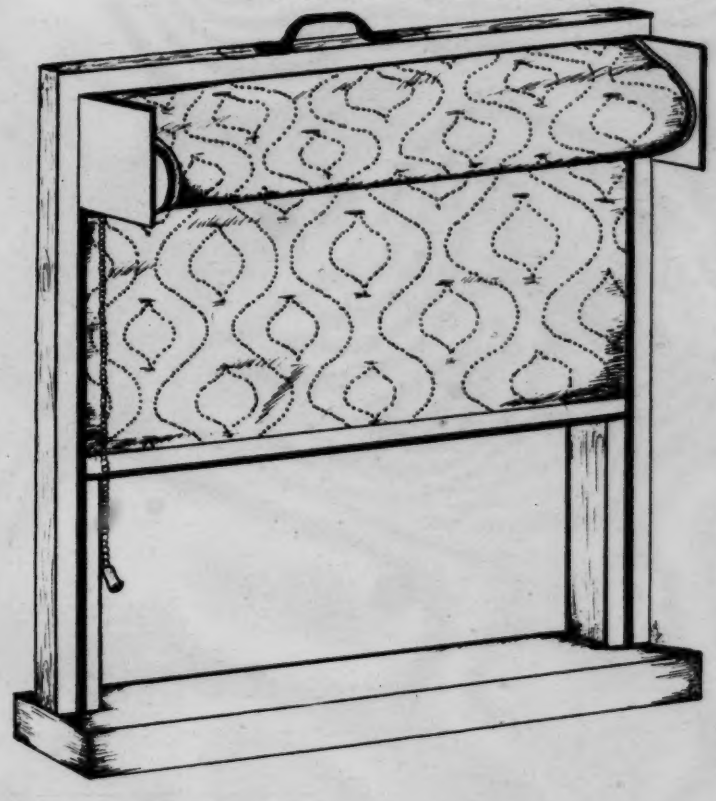
APPENDIX C

Flexible Insulative Window Shades

FLEXIBLE INSULATIVE WINDOW SYSTEMS

PRODUCT INFORMATION GUIDE

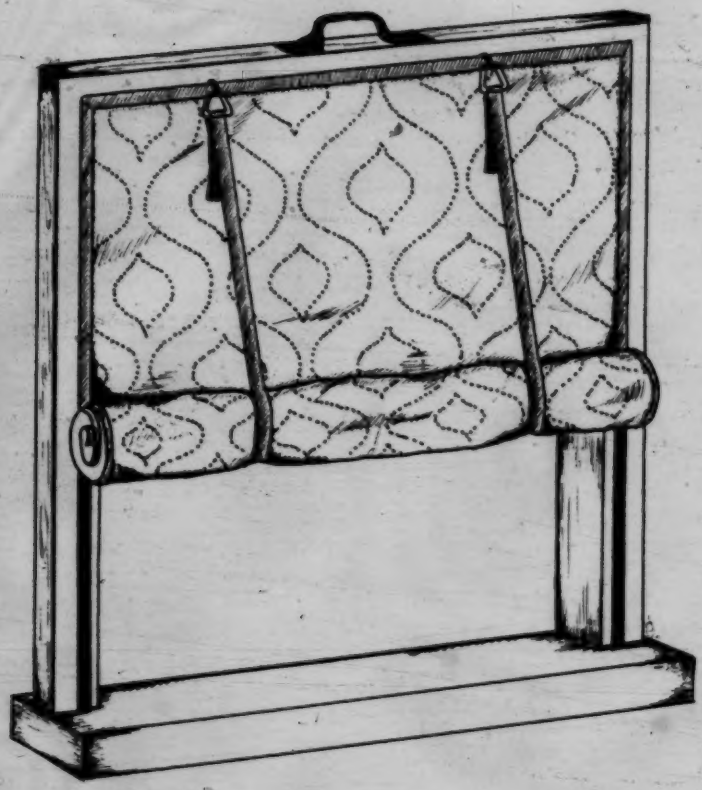
Name	R-value	Cost	Method of Operation	Components	Cleaning	Colors	Assembly	Available
ATC Window Quilt Shade A	5.2 with double glazed windows	$12.00 /sq.ft. for complete system	double rollers with side channels, self-locking pull cord and weighted hem	five layers of fabric fused together by ultra-sonic stitching	can be hand-wiped or hand-washed	48 colors available up to 42" wide, 8 colors available with white polka-dots, shades over 42" wide available in 8 colors only	minimal assembly required	at least three retail outlets in Edmonton
Shade B	(same)	$8.00 /sq.ft. for complete system	velcro tape along all four sides and adjustable straps	(same)	(same)	(same)	(same)	(same)
Sunergy Sunseal Shade C	5.0 with double glazed windows	$5.20 /sq.ft., add an extra $2.00 /sq.ft. for decorative fabric (optional)	single roller with side channels, bead chain with bead stop, weighted hem	two separate layers of aluminized rip-stop nylon, one layer of decorative fabric (optional)	aluminized nylon can be hand-wiped	white nylon with bronze aluminum coating, beige side channels	some assembly required, instructions provided	Sunergy Systems Ltd. Carstairs, Alberta
Enershade Window Warmer Shade D	5.49 with double glazed windows	$4.00 /sq.ft. if self-made, $9.00 /sq.ft. if factory made add an extra $2.00 /sq.ft. for decorative fabric (necessary)	roman shade operation with velcro tape at top and magnetic tape at sides and bottom, weighted hem	four layers of fabric joined at sides and at points of quilting	can be hand-wiped or hand-washed, no ironing	lining available in white, cream or beige, select own decorative fabric	extensive assembly required if self made, minimal if factory-made	can be mail-ordered from Enershade, Guelph, Ontario
Shade E	(same)	(same)	roman shade operation with velcro tape at top and wooden clamps at sides (also at bottom if bottom sill is absent), weighted hem	(same)	(same)	(same)	(same)	(same)



SHADE A

Window Quilt

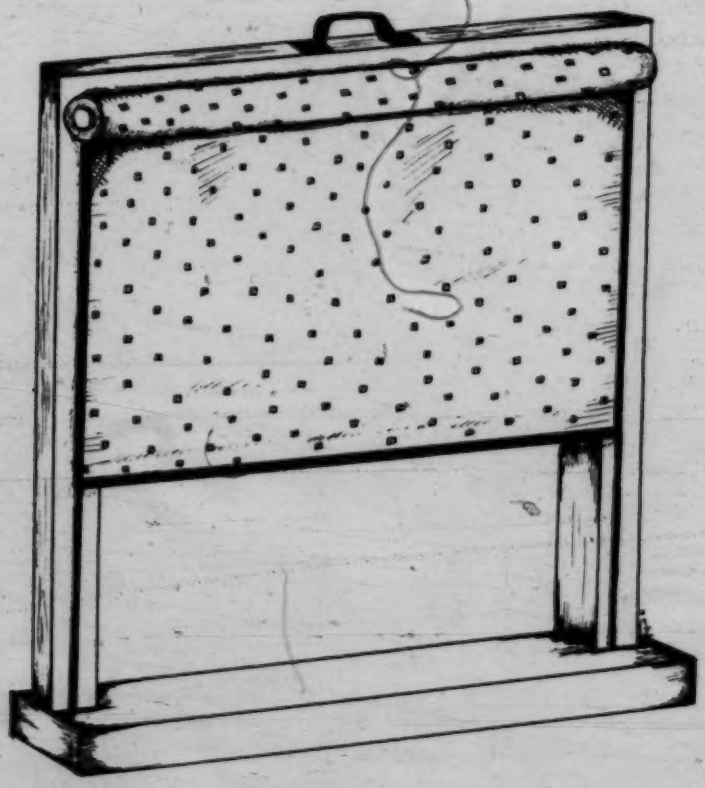
- double roller operation
- side channels
- five fabrics (sonic stitched)



SHADE B

Window Quilt

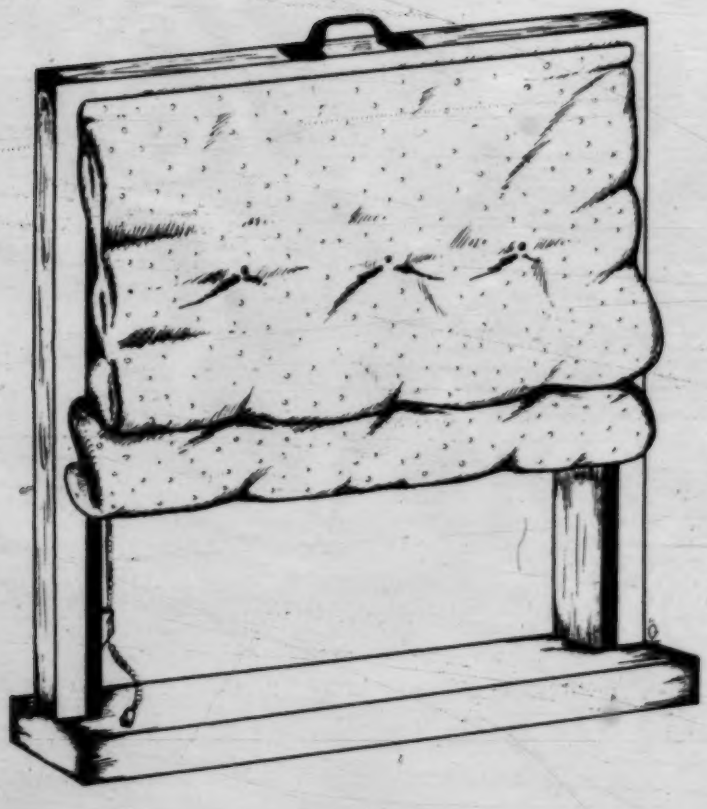
- velcro closure operation
- adjustable straps
- five fabrics (sonic stitched)



SHADE C

Sunergy Sunseal

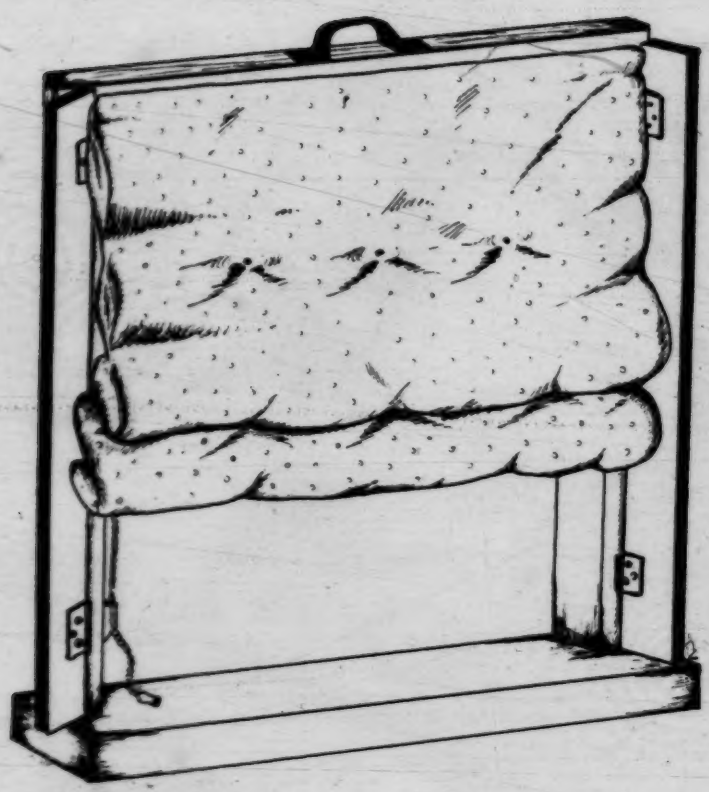
- single roller operation
- side channels
- double fabric layer
- decorative fabric (optional)



SHADE D

Window Warmer

- roman shade operation
- magnetic side tape
- four fabrics



SHADE E

Window Warmer

- roman shade operation
- wooden side clamps
- four fabrics